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Sperry buys into super chip firm

by Ron Coates

SPERRY last week spent $42 million for new technology and a 15% stake in Gene Amdahl's start-up company, Trilogy.

Sperry has paid the cash down for an option to licence Trilogy's just-released super chip, the first attempt at large scale wafer level fabrication to go into production, and a 15% equity in preferred shares in Trilogy. It will get a seat on the Trilogy board. This gives Amdahl's new firm a market value approaching $300 million before it has shipped a machine.

Sperry, which normally plays down the technology used in its machines, is being effusive about the potential of the new chip. Sperry chairman Gerald Probst, said that Trilogy's "high speed, ultra-reliable" chip was "years ahead of competing technology and is well suited to Sperry computer products." And he added that it was a major breakthrough in reliability and redundancy. Sperry will manufacture the chips at its new factory in Eagan, Minnesotta.

The computer giant announced its intention to use the chip in future high performance Sperry machines. But it was left to Gene Amdahl to play down any speculation that Sperry might be moving towards compatibility with IBM.

He said that the deal was consistent with both companies' approach as they "served different market segments", and added that their combined efforts would improve their market entry schedule. Amdahl said that Sperry's endorsement of Trilogy's technology was continuing evidence of its widespread applicability beyond his company's present IBM compatible developments.

Trilogy's chip, revealed to the world at large last week, is 6cm × 6cm, implemented in water-cooled emitter coupled logic, the industry standard semiconductor base for fast computers. It has a one input one output chilled water coolant with a total of 45,000 gates and 1,000 connecting pins per module.

The planned Trilogy computer will contain about 30 of the wafer-sized chips connected by standard 14 layer printed circuit boards. Switching speed within the chip is 300-350 picoseconds as compared to the fastest current serial processor, the Fujitsu 380 (sold by ICL as the Atlas 10) which has a switching speed of 24 nanoseconds.

The dramatic move demonstrates Sperry's determination to stay in the business of making large mainframes. Sperry this week announced the latest in its 1100 family (see page 4).

AMDAHL . . . Showing off the world's biggest chip.

US-French venture to build expert systems

by Philip Hunter

UK EXPERT system developers can expect major competition from the US with the launch of a $16 million initiative in Europe. A joint company to exploit growing demand for knowledge engineering products and services has been launched in Monaco by the US company Teknowledge and Paris-based Framatone, a $1 billion a year company which makes nuclear reactors.

The new company, called Framentec, will probably set up a UK branch at the end of the year, depending on its early success.

"In concept, the product we're building for the next year will be the same orientation as SPL's Sage," says Tecknowledge president Lee Hecht. The difference, Hecht claims, will be that there will be much better facilities for justifying the reasoning behind expert decisions made by the computer systems.

"Ours is the heavy duty industrial market," Hecht adds. "The product will be much more expensive than Sage."

Hecht says that his company, set up in 1981, has already gone a long way to meeting the Japanese fifth generation goal of developing an intelligent link between man and machine. "We have installed an intelligent front end for a very large Fortran program for geophysics," says Hecht.

Products of this sort, and also for other applications such as design of computer configurations, will be available soon from Framentec, for about $100,000.

Tecknowledge and Framatone have also formed a research and development organisation with funding of $16 million.

System 34 updates worth £200 million

by John Riley

IBM System 34 users intend to spend about £200 million on changing their aging system by next summer and non-IBM suppliers could well snatch part of this market. That is a finding of a survey* of 158 System 34 sites conducted by market researchers Xephon in the UK this spring.

The survey found that 44% of the System 34 users expect to buy a new CPU within a year and a further 32% expect to do so within 2-3 years. By extrapolating these figures to the entire UK System 34 population of 3000, the total upgrading would generate a £200 million market.

According to the survey, System 34 users are at a crossroads with six paths in front of them. These are, to move to the System 36, to a System 38, or to a 4300 mainframe, to buy in an additional System 34, or to go for a non IBM mainframe or minicomputer.

The survey was conducted before IBM launched the System 36 last month, but 9% of the respondents indicated that they would not consider the System 36 as an alternative. They fear CPU teething troubles, uncertain growth path and that it is a stop-gap.

The System 38 would be considered by 67%, although feared drawbacks included conversion to RPG III, cost, complexity, and lack of 38-specific packages.

Although the majority of users were satisfied with IBM and particularly with the System 34, 16% indicated that they would consider non-IBM mainframes and 26%, would consider non-IBM minis.

Wang, Hewlett-Packard and Digital Equipment topped a list of 24 non-IBM suppliers that System 34 users would consider as alternatives. IBM has already been taking the challenge from Wang very seriously, and Wang UK has been surprised at the stiff resistance that IBM is putting up.

* System 34 User Migration, Xephon Technology Transfer. Price £20.50. Details (0628) 74922.

Boom forecast for Ferranti

by Kevin Cahill

WITH Plessey's glowing results behind them, City of London analysts have turned their attention to Ferranti. Profits are forecast in the region of £31-£32 million when the company reports its 1982/83 results next week. Keith Hodgkins and John Tyso, the industry analysts at brokers L. Messel, are suggesting a figure of about £31.5 million, which is over 30% up on last year's reported profit of £23,8 million.

This is marginally better than the £30.5 million forecast by Nick Carter, the electronics industry analyst at brokers Henderson Crosthwaite.

In his newsletter Ferranti, Carter notes that the company has an outstanding international reputation for technology and is a leader in the field of electronics. Over the past few years Ferranti, according to Carter, has developed a management team to match its technical expertise.

He notes that Ferranti is now selling semiconductor devices to both the Japanese and the Americans, control devices to the Germans and military technology to the whole world.

In each instance Carter is saying that Ferranti has done the coals to Newcastle trick, and in the case of uncommited logic arrays in particular Ferranti is variously reckoned to have between 30% and 40% of the entire world market. The company pioneered the concept of customising logic arrays for specific customer requirements at a time when this idea was still very novel. Ferranti now has design centres in the UK, Hong Kong and in the US.

Acorn challenged on trading methods

by John Kavanagh

AN INVESTIGATION which could have major impact on the way computers are sold through dealers has been launched by the Office of Fair Trading into Acorn Computers. And the UK microcomputer manufacturer says it will fight to the end if the result goes against it.

The Office of Fair Trading is looking into a complaint from an unnamed Scottish supplier to the education and stationery trade, which wanted to buy Acorn BBC microcomputers from a local approved dealer. But the dealer referred to a strongly-worded Acorn statement which said the company would not tolerate wholesaling of its products by dealers. "Unauthorised wholesaling will be dealt with severely and may well result in discontinued dealership," Acorn said.

But the Office of Fair Trading is using its powers under the Competition Act, which allows it to investigate business methods which prevent, restrict or distort competition. If it finds against Acorn the company could be ordered by the Monopolies Commission to change the way it sells through dealers.

And that could hit many other leading microcomputer firms which sell in the same way.

"The machine is only sold once but the support and back-up are sold forever," said Acorn dealer manager Sandy Dow. "We have to be able to choose and monitor our dealers. If the Office of Fair Trading decides we are wrong we will have no control over our outlets. That will only be to the detriment of the end users."

Dow said Acorn examined companies' backgrounds in detail through questionnaires and visits before making them dealers. "We avoid appointing too many in each area otherwise they concentrate on cut-throat sales to the detriment of user support," he said.

He added that Acorn would fight if the investigation went against it. "If it comes to a stand-up row we'll show the Office of Fair Trading that this is a professional market; we're not in the business of selling soap packets across the counter."

Other companies backed Acorn's view. "If our business systems dealers are selling out products on in the trade we tell them to stop," said Commodore marketing manager John Baxter.

"A business system needs proper support and maintenance. If some fly-by-night sells five systems and then disappears we're left to sort out the mess."

■ Leader comment – Page 15.

LINE NOISE

SOMEWHERE in the North of England, not too unadjacent to Withenshaw, word has it that a new semiconductor plant is actually opening its doors next month for first deliveries. According to rumours soon to be confirmed, the factory, which will have a capacity of 1,000,000 pieces a month, was kitted out from start to finish in just one year for a basic unstaffed cost of about £10 million. The timing of the opening is neat, since NEC, the Japanese company, will be hosting the Queen to its £25 million plant opening on July 9. The NEC plant is in Livingstone in Scotland.

ONE of ICL's leading software associates, **Safe Computing,** *had something of a rough time over the last few years, with profits vanishing and staff departing. All however is about to change as City rumours indicate a substantial return to profit by Safe. This will be welcome news for City investment institution UCAT which stuck a lot of money into SAFE 15 months ago. There was optimism at the time that Safe would be an early candidate for the Unlisted Securities Market. Better late than never, as they say.*

ICL is concerned that its managers might be over-reacting to its good half-year performance. An internal memo has been circulated warning them to be "very careful" in hiring new staff. An ICL spokesman said that this was aimed at controlling internal costs, particularly those incurred through the use of contract staff.

"We've had an almost complete block on recruitment for two years," he said. "And although we are hiring staff, we don't want our managers to over-react in the light of the half year figures."

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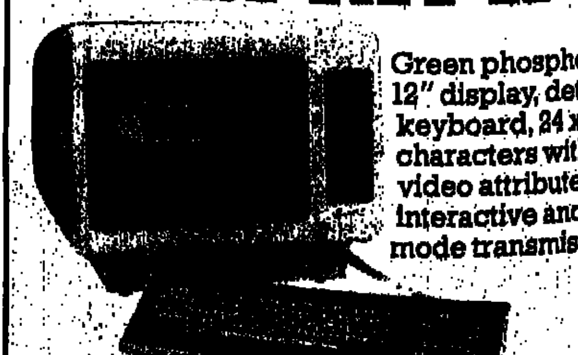

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TRAMIEL . . . First in Inmos queue?

Commodore sizes up Inmos purchase

by Kevin Cahill

INMOS, the British Technology Group's brave and expensive effort to give the UK an independent volume chip manufacturer, is under the auctioneer's hammer.

Earlier this week Jack Tramiel, the ebullient founder and executive vice president of Commodore International, and his son flew in to be first in line to buy as the Inmos chairman Malcolm Wilcox looks at every possible solution to secure the company's future.

The Tramiel visit, which Inmos acknowledged was taking place, while refusing to say why, follows rapidly on a recent visit to the US by Wilcox.

The company describes the US visit as routine, but there has been a noticeable quickening in the pace of activity at the chairman's office as the election and the prospect of an even more hardline Tory government emerged.

Inmos offcially says that a prospectus to attract City Finance is being prepared.

Commodore already has its own chip making through subsidiary MOS Technology, with plants in Pennsylvania, California and Texas.

It recently spent $250 million upgrading equipment, and now has capacity to turn out 60,000 wafers a month, all of which is used within Commodore.

In January this year, Commodore signed up Zilog to manufacture custom circuits for Commodore machines.

The deal also licensed Commodore to build the Z8000 16-bit processor for use in future microcomputers.

Top software men plot against pirates

by John Kavanagh

TOP international government officials are meeting in Geneva this week to agree on a worldwide treaty to kill software piracy. The proposed treaty goes far beyond existing copyright laws to cover not only software copying but also unauthorised use by customers.

The meeeting is being run by the World Intellectual Property Organisation, which is supported by governments across the world.

The UK is represented by senior, specialist civil servants from the Department of Trade. And Ronald Robertson, head of the legal department at UK software house CAP and chairman of the Computing Services Association's legal affairs group, is there on behalf of the European CSA.

A measure of the seriousness of software piracy is the fact that senior government people and others such as these are dedicating the entire week to this one topic.

"Software piracy is costing UK services companies millions and the problem is growing," said CSA director-general Douglas Eyeions. "It is especially serious at the micro end. This is a very important conference."

The treaty lays down laws covering the copying and production of "substantially similar" software. And users, too, could find themselves in the dock under a clause covering the use of pirated systems. In all cases the original owner of the software would win damages and injunctions against further piracy or use.

Eyeions especially welcomed the fact that the treaty covered users. This meant it would get to the heart of "the real abuse" of copyright, he said.

He also stressed the importance of the international nature of the proposed law. "Some companies are reluctant to sell overseas because of the lack of protection," he said. "They know that if they sell one copy to certain countries it will just get duplicated."

If the officials sign the treaty this week, their governments will be expected to bring in the laws in a set period. This week's conference could thus be as significant as the Council of Europe meeting which agreed on a data protection treaty. That committed countries including the UK to introducing data privacy laws.

Laws specifically covering software copyright would put an end to years of work by the services industry and some MPs to make existing rules relevant to computing.

Leader comment – page 15.

EYEIONS . . . Piracy is costing millions.

Monopoly case draws IBM defence

IBM IS defending itself this week before a formal European Commission hearing against charges of abusing its "dominant market position" contrary to Article 86 of the Treaty of Rome. A senior EEC official last week confirmed that the EEC will pursue the 10-year-old monopoly case to the bitter end, although a final decision will take several months yet.

Apricot is ripe

APPLIED Computer Technique's home-built portable micro, the Apricot, is ripe on time. The 16-bit micro, to be built at ACT's factory in Glenrothes, will be launched in two weeks, with volume production coming in the autumn. The Intel-based machine will complement ACT's present desktop Sirius.

Queen's honours

IT HAS been a good spring for Sir Clive Sinclair. First his company Sinclair Research became the first to sell a million home computers, then the dispute at the Timex factory in Dundee was settled, enabling him to go ahead with production of his flat screen television. And finally, just after the general election, he received his knighthood in the Queen's Birthday Honours. Also honoured was Dr Adrian Stokes, Director of Computing at London's St Thomas' Hospital, with the OBE for his work with the disabled.

Amdahl's dates

AMDAHL has announced availability dates for support of IBM's MVS extended architecture on its 580 series and its 470 V7 and V8. A new entry level machine, the 5840, has also been announced for delivery in the fourth quarter, and a head-on challenger to IBM's top-end 3083J mainframe has been launched.

IBM takes a stake in telecomms maker

by Haward Karten

IBM LAST week agreed to buy 15% of Rolm Corporation, a Santa Clara, California manufacturer of telecommunications equipment such as PBXs and switches. The move comes shortly after IBM took a stake in Mitel Corp, which also makes PBXs.

IBM will spend $28 million to buy approximately $3.8 million newly-issued shares of Rolm stock, and will be limited by agreement with Rolm to a maximum 30% ownership.

In addition, the purchase will get IBM two nominations to Rolm's board of directors.

US industry observers have long predicted the coming of a head-to-head battle between IBM and communications giant AT&T, and that speculation has picked up considerably in the past 18 months with the settlement of both the AT&T and IBM antitrust suits.

It is widely rumoured here that AT&T is preparing to launch a microcomputer, perhaps one based on AT&T's Unix operating system.

Moreover, IBM has frequently been regarded as perhaps having missed several good marketing opportunities in the office automation area, despite the market inroads the IBM PC and PC XT micros have made. The pact with Rolm may plug this gap for IBM.

In New York, Dan Mandresh, an analyst for the Wall St firm Merrill Lynch Pierce Fenner and Smith, Inc, is reported to have said of the deal, "IBM won't be restrained by the 'not invented here' syndrome."

Rolm is a major supplier of military telecommunications and computer systems and has over 5,000 general purpose military computers installed worldwide.

The company is currently pursuing a £66 million suit, launched earlier this year, against Plessey.

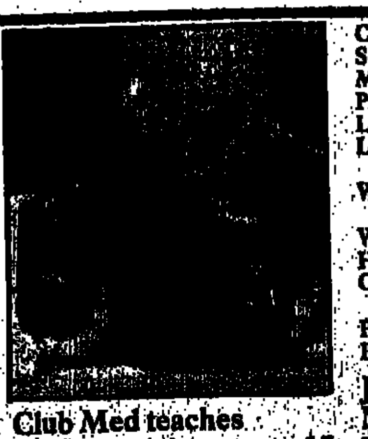
Rolm alleges breach of copyright by Plessey, claiming that the UK company based its IDX exchanges on Rolm's CBX.

Plessey denies the charges and has launched a counter-suit in the US. A seven year agreement between the two companies ended in mid-February of this year.

The California company earlier this month claimed a significant lead with its Ada compiler, which it is developing in partnership with mini-maker Data General.

Figures make software bosses happy 3

Which micro operating system? 18/19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NEDO tries to stop tariff trouble

BROAD . . . Welcomes the initiative.

by John Riley

NEDO this week started a fresh attempt to sort out Euro-tariff barriers to UK micro and component makers.

A working party has been set up by the Electronics Economic Development Committee (EEDC) of the National Economic Development Office (NEDO) to reconcile two opposing proposed solutions.

UK semiconductor manufacturers are protected by the EEC import tariff of 17%, as are printed circuit board manufacturers by the 8.6% import duty on bare PCBs and the 8.1% duty on PCBs printed with passive components.

They are both unhappy about the concession to computer manufacturers of only a 5% duty on sub assemblies – PCBs with active devices such as semiconductors on them.

The PCB manufacturers believes this situation deprives them of opportunities to manufacture PCBs and add value to them, while the semiconductor manufacturers believe the sub-assembly route is a way round the 17% duty.

Both parties are pushing for an increase of the sub-assembly tariffs from 5% to 17% when semiconductors account for over half their total value.

On the other side, the microcomputer manufacturers want the tariff on imported semiconductors to be reduced so that they can reduce costs.

The Department of Industry has put forward a compromise proposal that the duty rate on semiconductor devices should be reduced from 17% to 11%, and asked the EEDC to work out a policy that would unite the two sides so that an agreed British approach can be made to the EEC to get the anomolies removed.

"We welcome the initiative," says David Broad, chairman of the British Microcomputer Manufacturers Association, who is on the working party chaired by Professor John Ashworth, the next chairman of the NCC.

"We hope it will draw attention to the plight of British manufacturers. We want low duty rates on imported components to maintain competition and the BMMG will continue the political lobby until we get it."

NEDO hopes to complete the report quickly this summer so that a submission can be made soon to the EEC. However, the report still has a long way to go.

It will be incorporated into the DoI submission to the EEC. The commission will send it to other EEC countries for their views, and then back to the EEC standing committee on trade in Brussels for a community view. It would then go to GATT (General Agreement in Tariffs and Trade) negotiations in Geneva to be discussed.

Asian spies cause French shutdown

by Jack Gee

INDUSTRIAL spies from South-East Asia are believed to have carried out the theft of vital computer components for operating a robot which has forced a French manufacturer of high-fidelity loudspeakers to shut down, making 120 workers temporarily unemployed.

A set of eight circuit boards were stolen from a factory near Brest, Brittany, while it was closed for the weekend.

The thieves left a safe contining a big sum in cash untouched.

But they sorted through a dozen boards before vanishing with eight specially designed for the firm of jean Cabasse.

The manufacturer drew attention to his technology at the recent international hi-fi exhibition in Paris by presenting the robot system, the only one in the world used for making loudspeakers.

France's counter espionage police force, the DSI claims that it is already on the trail of the thieves and has traced them to Taiwan.

A man claiming to be phoning from Taiwan called the manufacturer's wife, saying he knew how to recover the missing circuit boards. As proof that his offer was genuine, he gave his phone number in Taipei – and Madame Cabasse phoned him back in the presence of DST officers.

"The caller told us he worked in the computer industry and had himself been the victim of industrial espionage," said Cabasse.

"He said he had identified the thieves and could probably recover the cards. But they would probably demand a huge ransom."

DST agents said the thieves were obviously specialists because they knew exactly which cards to remove from the computer.

Cabasse said: "It is unlikely that we will agree to pay cash to recover the cards. It will take two months for me to have new cards made. Meanwhile my staff have had to be laid off and I have lost huge orders. But I will not give in to blackmail or espionage."

Welcome booklet misses VDU point

by John Riley

KEY issues relating to VDU safety are not mentioned in an influential Health and Safety Executive booklet published this week, others are glossed over, and it is out of date.

That is the view of Brian Pearce, of Loughborough University's Human Sciences and Advanced Technology Research Group (Husat).

Pearce runs a popular seminars on VDU safety which are widely attended by industry.

"The booklet doesn't mention the allegations of links between VDUs and malformation in pregnancy, for example," he commented.

Pearce believes that there is insufficient evidence for any links but that the report should have allayed fears which have been widely publicised in the British and especially Canadian press.

The booklet is in two parts. The first examines possible health effects associated with VDU use and draws attention to reports of cataracts, photosensitive epilepsy, facial dermatitis and general radiation emissions from VDUs.

It concludes that radiation levels are below existing national and international standards, that photosensitive epilepsy is rare (between one in 5,000 and one in 10,000), and that there is no firm evidence regarding cataracts and dermatitis.

The second part of the booklet provides an overview on points relating to the introduction of VDUs and covers workplace design, personal factors, planning, communication, and VDU ergonomics.

Pearce applauds the belated appearance of the booklet, but believes it doesn't scratch deeply enough in some areas to have the influence it deserves.

"It is a much needed work which will provide much needed guidance.

"It is a difficult subject to write about, but it needs more emphasis on the economic advantages of incorporating ergonomics to persuade hard-deaded DP managers that ergonomics are beneficial."

Other points that Pearce thinks are inadequately discussed include how eyesight screening should be carried out, and whose responsibility it should be, and the importance of job design.

"The job design is most important," he said. "If that is all right then you don't need to have rest pauses."

Another fear that the booklet should have allayed, according to Pearce, is that VDUs might emit more radiation as they become older and more inefficient.

The three year delay in producing the booklet means that the Health and Safety Executive is five years behind, thinks Pearce, as union guidelines have appeared since 1978 which serve to cloud the issues.

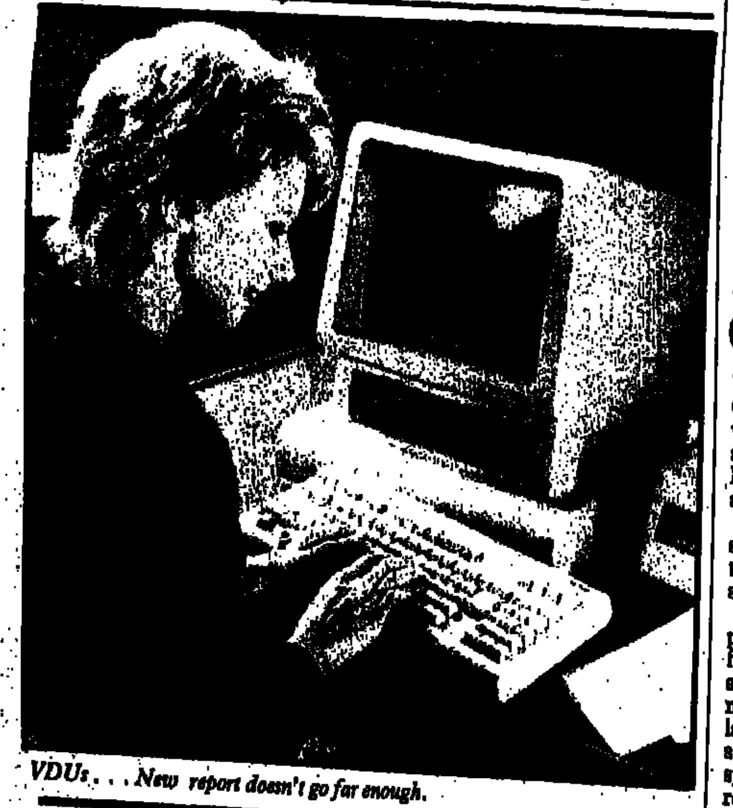
"The union documents oversimplify the over complex issues and state numeric values for certain parameters in attempt to give numbers for negotiations. But they get their numbers and concepts confused, with bizarre results," he said.

Nevertheless, Pearce believes that the booklet will be generally well received.

"The unions will be upset about eyesight screening and the absence of references to visual screening.

"It won't be seen as suggesting tandards prohibitive to manufacturers and is better than the German approach," Pearce commented.

* *Visual Display Units*, Health & Safety Executive, HMSO: £5.



VDUs . . . New report doesn't go far enough.

Production problems hit Kilostream users

by Donald Kennett

TEETHING troubles on GEC-Marconi's production lines are causing delays to customers for British Telecom's Kilostream digital leased line service.

Kilostream started in January, making a range of digital circuits available with speeds from 2.4Kbits-per-second to 64Kbps.

The schedule announced in March was to have the service available from 250 centres by the end of the year and a BT spokesman said that his company still expected to meet that target.

"But it is certainly true that availability is not as wide as we had hoped it would be at this time," he said. He declined to confirm reports that 50 customers had been connected and 150 were waiting, on the grounds that this information was commercially sensitive.

A Marconi spokesman admitted that the supply of codecs and multiplexers needed to implement the service had fallen behind, but he added: "Now that the problems are over, we expect to catch up. Liberalisation has increased demand about threefold and it has just been gearing up to suit everybody that has been the difficulty."

The company had been supplying the devices over a period of time already, he said. It had spent a lot of money on setting things up, but had experienced teething problems.

"It's high technology and it's new technology," he said.

The new technology involved is automatic component insertion and wire wrapping machinery. "It's new to this company and it's brand new equipment," the spokesman said.

CTL momentum grows

by Philip Hunter

COMPUTER Technology (CTL) will tomorrow extend its fault-resistant hardware, the Momentum Range, into the super micro field and boost its top end offerings.

Existing models have at the same time been upgraded to take their place in what will be the 9000 series.

The larger new model offers power equivalent to a small mainframe, and will challenge Tandem and others in the top end of the market for front end processors to large banking systems, as well as stand-alone transaction processing systems with varying degrees of resistance to hardware failure.

At the bottom end of the new Momentum range is a machine that can almost claim to be a resilient micro. "It definitely comes into the super micro league," says a spokesman.

CTL's fault-tolerance is based on software, and can be built up in stages from the basic 9000 computer. Tandem's solution is hardware-based, with closely coupled processors using a common set of links.

The first phase of resilience available from CTL is a fast recovery option capable of returning a database to a clean and consistant state. The second is a mirror disc option, and the third, to give full resilience, is a link between two processors.

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Top software houses enjoy Euro sales boom

by George Black
and Jack Gee

LEADING international software houses are booming – sales of applications systems for smaller IBM machines alone whould grow from $360 million to $2,550 million in western Europe by 1987.

Three of the market pacemakers published annual financial results this week. Biggest of the trio was the French Cap-Gemini-Sogeti, which increased its revenue by almost a quarter last year.

This was, however, the slowest growth of the three, with profits up only 5%. CGS income is now over one billion Francs (£100 million), according to a report from chairman Serge Kampf in Paris.

The US database expert Cullinet Software announced a rise of 59% to $78½ million, compared with $49¼ million for the previous year. And the British computer group, Business Intelligence Services (BIS), chiefly famous for the success of its Midas banking system, saw its turnover go up by more than 60% to £23 million, with a startling jump in profits by 95% to almost £2.7 million.

The American software market is by far the largest in the world and is dominated by American companies, although British and French firms such as BIS are beginning to make significant inroads there. BIS managing director Roger Graham attributed his firm's outstanding year to higher overseas sales, particularly to the US, coupled with a helpfully weak pound against other international currencies.

In Europe it is undoubtedly the French who continue to reign. Their software firms netted 11.4 billion francs in 1982, up 22% on 1981, with nearly a fifth of that coming from exports, according to French official figures.

But some UK observers say that those statistics may be misleading. The French have five of the top 10 European software houses, but this may present a brighter picture for them than is strictly accurate.

As British Computing Services Association director-general Doug Eyeions commented: "They include the output of some nationalised firms and banking subsidiaries, which we do not. And some British firms like Logica and CAP count their overseas branches as earning money for their domestic economies rather than contributing to our exports."

French figures indicate that they have more than 100 software firms – but the number of independent ones is fewer than 50 and activity is centred on a few giants.

Britain, at present Europe's number two, has about 200 smaller concerns specialising in software. Our best performer – under the French definition at least – is the BP subsidiary Scicon, which comes third in their list (topped, of course, by IBM's European offshoot).

Italy has about 250, mostly still very small, software firms. And West Germany, though predicted to be the biggest market for selling programs to by the end of the decade, has so far gained only a tiny share.

France's software firms have doubled their staff in the past six years in spite of the recession to over 40,000. The growth has been boosted by the worldwide success of Transpac, the public packet-switched network designed by SESA and Teletel.

CGS is a major component of the French success, with more than 4,000 employees, 820 of whom work in the US. By 1989 the group hopes for a turnover above five billion francs from a workforce of 8,000.

IBM systems houses can look forward to a special bonanza, according to researcher IDC. Its findings follow IBM's launch of a new joint marketing and hardware discount scheme for software houses to boost sales of small machines.

IDC reports that users of smaller machines account for 19% of the $1,900 now spent on software and services by IBM sites. But by 1987 they will make up as much as 39% of that budget – bringing an extra boom for those providing the software.

GRAHAM . . . Outstanding year due to overseas sales.

MIDAS banking system owner BIS increased its turnover by over 60% to £23 million last year and is aiming at the £30 million mark for 1984.

Managing director Roger Graham claimed the results showed BIS to be Britain's most profitable independent software house. Total of employees rose from 700 to 800. Around £2 million was ploughed back into research and development.

The Business Intelligence Services group raised its profit margin even further, by 95% to almost £2.7 million over the last year. The longer-term objective has been set at revenue of £50 million by the late 1980s.

There are plans to introduce a range of new mini- and micro-based services in the near future, partly for the firm's traditional areas of banking and insurance, but spreading into computer-aided learning, electronic direct marketing and technological research.

IBM and DEC unite to help Massachusetts

by Howard Karten

IBM AND DEC last week joined forces to contribute $50 million in hardware and personnel to the Massachusetts Institute of Technology.

IBM will give the top-rated engineering school about 1,000 Personal Computers and single-user workstations over a five year period, while DEC will provide around 63 minis and several hundred terminals, personal computers, and advanced graphics terminals. Both companies will also loan MIT at least five employees for each of five years.

The joint effort, dubbed Project Athena, is designed at least in part to explore how advanced computers and graphics can be used to "revolutionise" undergraduate-level teaching, according to MIT president Paul Gray.

In addition, the joint effort is aimed at least in part at developing ways to link the two manufacturers' hardware and share data between devices of different manufacture.

IBM claims it has no intent to create proprietary products as a result of the deal, and that it has not negotiated any patent or licensing rights or arrangements.

Unknown challenges Cray

by Howard Karten

AN obscure Aurora, Colorado, computer manufacturer last week announced plans to introduce a line of four computers capable of operating at 250, 500, 750 and 1,000 mips. The systems are currently under development, with initial shipments expected by first quarter 1986.

A design team is currently developing the system, using the same fundamental architecture as the company's current systems, but with large-scale integration instead of medium-scale integration, according to Denelcor spokesman Darrel McGinnes.

Asked why the little-known company announced the system so far in advance, McGinnes said: "It seems as if all our competitors are doing that sort of thing – Cray has announced a system for late '85 or '86, the Japanese are announcing enormous machines which they can't deliver, and we just wanted to tell the world that we're working on going there, too."

Denelcor has been on the computer scene for approximately 20 years under a variety of names.

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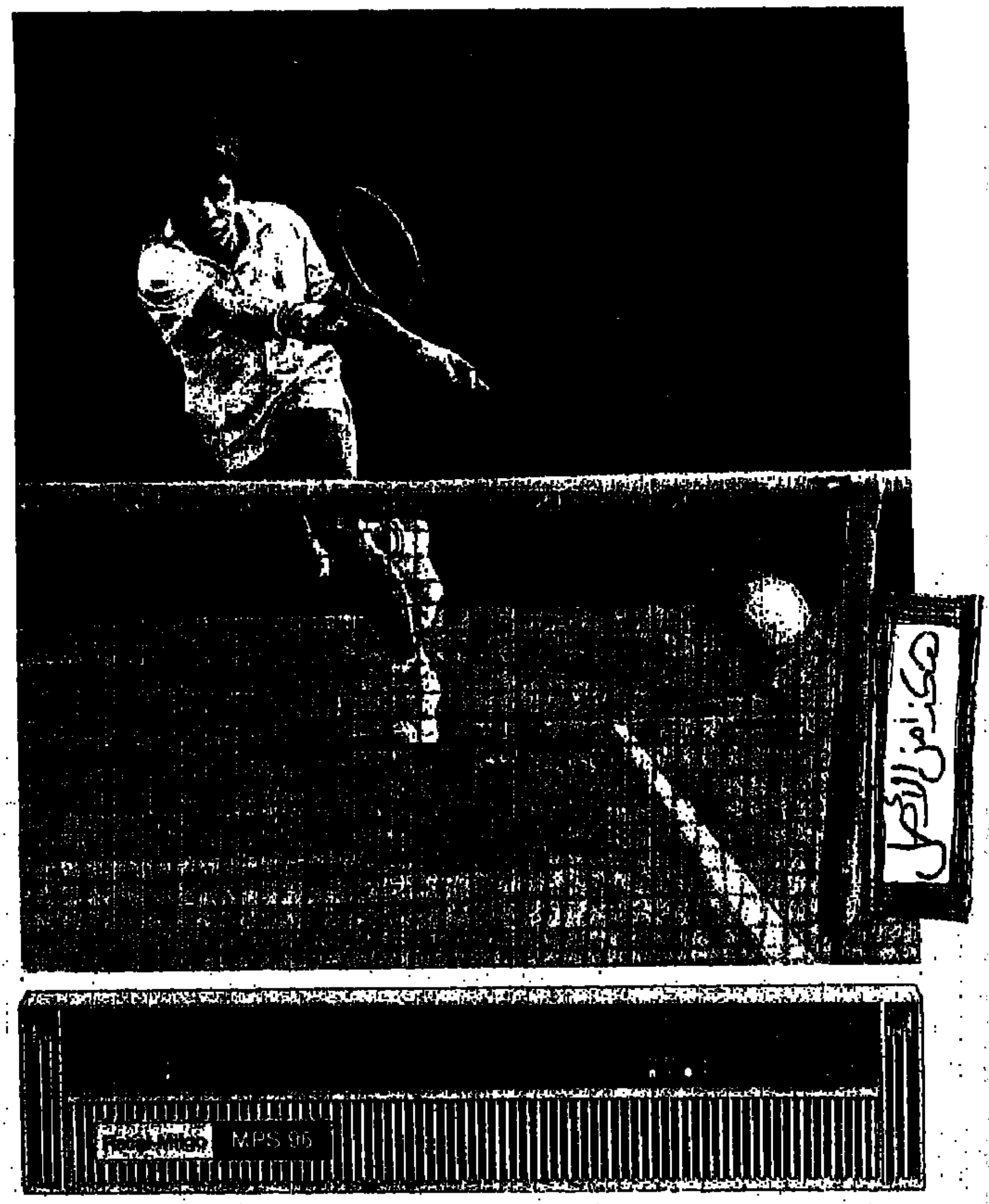

Luton link lifts General Motors

by Donald Kennett

GENERAL Motors' plant in Luton has been linked into a corporate office automation system in Detroit that has already brought the company some spectacular savings.

The system was described at last week's Office Automation Show/Conference in London by the company's office systems manager Michael Flynn who said that it had paid for itself in 13 months.

He emphasised that the most important stages of installing office automation were the planning stages and that improving efficiency was no good unless people did something useful with the time that was saved.

"What we have to do is either make the organisation more effective, or we make our products more effective," he said. The system has been used to do both.

Based on an Ethernet local area network with Xerox personal computers and word processors, the system is initially being used by "environmental activities staff," who monitor the requirements of pollution regulations and certify the performance of company products.

"Our product is voluminous text," Flynn said. "We interface with government and it's nothing for us to produce a 500 page report on acid rain or some similar problem."

Improving the productivity of the management and technical staff working on these reports had enabled them to tackle a task they would not otherwise have attempted. That was to develop a counter-proposal to the way in which the State of Illinois planned to implement a federal law on pollution.

The state plan would have cost the company about £500,000 a year, while developing the counter-proposal would have cost the company £600,000 using pre-automation methods. The actual result was a first-year saving of £300,000.

Another important saving Flynn cited concerned the annual update of the company's worldwide vehicle reference manual.

The time had been cut from 60 to three days because of the ease with which the work of people in widely dispersed departments could be co-ordinated. The effort had been cut from 22 man-months to four and people could respond to queries in minutes instead of up to eight hours.

Planning for the system started late in 1980 and installation started at the beginning of last year, with the first phase costing £735,000. The number of personal computers on the system had reached 130 and was going to be 160 by the end of next month, but the number of word processors had shrunk from 32 last summer to eight now.

Initially the system was used for document preparation and message passing. But the company wants to add archiving and electronic catalogue and manual publishing. It is evaluating a Digital Equipment Vax based system for filing and retrieval, and is talking to Rolm, Mitel and Intecom about a digital PABX to marry to its local area network for external communications.

In designing the system, Flynn's team involved as many as possible of the people who were going to use it, which meant consulting more than 100 people in all. When it came to implementing it, the company decided to make its use voluntary, but allowed for peer pressure to take effect.

For example, people who dicated their text got the output back on floppy disc. One middle manager (the most difficult group to sell the system to) who complained about using the system had his terminal taken away. He later reported that he was outside of the information flows in his department because none of his subordinates wanted to give him hard copy of information that was on the system.

At the purchasing stage, Flynn said the company contacted 10 equipment vendors and sent them a 45-page specification of what the ideal system would be able to do.

Five of them made no response at all, two said thank you for thinking we could respond but we cannot and three made proposals for partial solutions.

WEGBREIT . . . No deals yet.

Convergent moves into mini business

by Robert Parry

OFFICE workstation builder Convergent Technologies is moving into the mini business. It's new MegaFrame, an expandable system designed around the promised full 32-bit version of Motorola's 68000 processor, is aimed to take business from the supermini and small mainframes makers.

And like Convergent's present product line, MegaFrame will be taken on by mainstream computer companies on an OEM basis. It has already been shown in the US by Gould, in the PowerStation guise, and Convergent's major customers Burroughs and NCR are expected to sign up for the machine soon.

"We have purchase orders from two dozen customers, and expect another two dozen in the next couple of months," says Ben Wegbreit, general manager of Convergent's data systems division. These orders range from ones and twos to hundreds of units. First shipments will be in August.

Wegbreit confirms that Convergent is talking to NCR and Burroughs, but maintains there are no deals yet. "We are working on it." A Burroughs' spokesman adds that it is interested in the whole of Convergent's range of products, but has no specific plans yet for the MegaFrame.

The MegaFrame was designed as a flexible architecture to stretch from an eight-user system for around $20,000 to a 36-processor machine, with the processors working in parallel on a 32-bit bus, supporting 128 users.

"It is thought of as a micro because the chips are small," says Wegbreit, "but its processing power puts it well into the mainframe range."

From the start it was designed for the forthcoming 68020 32-bit processor, but for the moment uses the 68000. Wegbreit reckons Convergent will be the first company to ship products using the 68020, and that by then will be using 256K dynamic RAMs too.

The present 8086-based workstations can act as super-intelligent terminals to MegaFrame, which can also support dumb terminals plus Convergent's new programmable terminals, also 8086-based.

And its portable micro, the Ultra, will have the ability to connect to MegaFrame. Ultra will appear at the end of the year, says Wegbreit.

Database dream nears fruition

by Donald Kennett

THREE Californian innovators are hoping to realise a 10-year-old dream of community computing this year.

Osborne 1 designer Lee Felsenstein, with friends Ken Kolstad and Efrem Lipkin, seven full-time staff and a circle of part-time helpers have been developing a coin-operated database system that will enable inter-linked community databases to be accessed and contributed to from terminals in places such as libraries, bookstores and community centres.

A public trial based on a donated IBM machine met an enthusiastic response when it ran 10 years ago, but the organisers found that maintenance costs made continuation difficult and expansion out of the question. Falling hardware costs and increased system reliability have encouraged the group to try again.

In the meantime Community Memory Project, as the group is called, has developed the software – Sequitur and X-dot – to run the database and to provide error-free links between community-based processors.

CMP is a non-profit organisation and the commercial sale of the software through its associated company Pacific Software Manufacturing is described as a spin-off activity. But it does make a significant contribution to keeping the Project going. Other funds are donated by members of the computer industry, including Felsenstein who still works full-time for Osborne.

Project member Marcy Darnovsky said last week that technical development of the public terminal part of the system should be completed in the next two or three months and implementation will depend on the success of fund-raising activities being conducted at the same time.

The first system is expected to go into a San Francisco neighbourhood group centre.

"We are hoping that the community it serves will take the initiative in raising the funds." Darnovsky said. "But the system provides access to technology for those who wouldn't otherwise have it and lots of foundations are interested in funding facilities."

Dynabyte tries to fire UK

by Philip Hunter

US MAKER of business micros Dynabyte is trying to ignite its UK market.

It is signing on distributor Key Computers to build a complete package of support and software. The package is based on Dynabyte's eight and 16-bit Monarch micro launched in Europe in February 1983, and includes a year's free maintenance, provided by Systems Reliability.

Two software companies are also involved, with business and financial accounting programs from MPSL and Larknet included in the package.

The final end user price is high at about £32,000 for the support, software, a Mannesmann Tally printer, and the realistic maximum of eight Itoh terminals. This puts it in the price range of the cheaper minicomputer systems as supplied by companies like Digital Equipment, Data General and Wang.

WOODS . . . "Customers happy to pay fair price."

But Key managing director Roger Woods says that special support, which includes an acoustic coupler to enable users to contact the author of software to sort out problems, will attract small companies. "Customers are happy to pay a fair price for support," he says.

Key is committed to take 100 Monarch computers in the first year, and is looking for 12 UK distributors to sell them.

With more than 12 distributors, says Woods, it becomes difficult to coordinate good support and good maintenance.

The package offers most of the standard operating systems, including BOS, MP/M and Oasis, and Unix will be added later this year. The micro is based on a 16-bit Intel 8086 central processor, with a Z80 eight-bit processor to control input/output operations.

Again later this year, the micro will be adapted so that the eight-bit and 16-bit processors run concurrently for greater power. There is also an as yet vague plan to incorporate a 32-bit processor next year.

France boosts its schools scheme

by Jack Gee

FRANCE has given its school computer programme a major boost with an order for immediate delivery of 1,000 Thomson-CSF TO-7 family micros with a further 2,000 in the autumn and 3,000 in January 1984 from the same firm.

Daniel Gras, top adviser at the Ministry of Education, said: "The government wants 20,000 microcomputers in the classrooms over the next few months and 100,000 will be installed by the end of the ninth national economic plan in 1988. The target for the end of the current year is 10,000."

Ministry of Education orders are providing a new, vigorous incentive for France's lagging microcomputer industry. They have helped Bull's subsidiary R2E RPT R2E to extend its product range and enabled ailing Logabax to survive thanks to a contract for 2,800 machines.

Learnord, a small information technology venture based at Haubourdin, near Lille, where it specialises in electronic equipment for laboratories and industry, says that education ministry orders for its microcomputers now account for 30% of its 60 million francs turnover.

Chairman Bernard Pronier says: "We now expect 30% growth in 1983. The school market has served as a showcase for our products and helped us to profit from economies of scale and to set up a more efficient marketing network."

The French government plans to spend 1.5 billion francs (120 million sterling) on computers for elementary and secondary schools over the next five years without including orders for universities, technical colleges and training establishments.

The Matra Group, in which the French state now has a controlling stake, is developing a range of school micros with "Didactiels" (educational software packages) designed by leading French publisher Hachette.

SALES BRIEF

Wang wins contract in Australia

WANG has won a $70 million contract to automate the offices of Australia's Department of Social Security. The contract is the largest ever office automation contract down under, and includes 7,000 workstations to be linked up to a national network. The company will also provide 400 computers spanning the entire VS range from the 16-bit VS 25 to the 32-bit VS 100.

MoD chooses

ANOTHER big contract, worth £1 million, has come Ferranti's way from the Ministry of Defence just as the company is about to report record £30 million profits and the opening of a new factory. The contract is for a computer-based Radar Procedures Ground Trainer to help the Royal Navy train its men in use of airborne radar.

Shefra typesets

PUBLISHING baron Robert Maxwell has spent another £500,000 with UK distributor Shefra Graphics for a real time system to extend the computer typesetting capabilities at his European Printing Corporation in Dublin. The company already has one similar system and is preparing to install an Image Composition system for full page make-up online.

Car dealers buy

THREE more car dealers have installed the Kerridge Autoline package, which is based on Wang computers, to keep track of spare parts and run payroll. These successes follow a recent £2 million order from the Toyota dealer in Saudi Arabia.

Graphics top £2m

WELSH graphics specialist Data Type has now topped the £2 million mark for sales of the graphics option to its TeleVideo terminals. Three-quarters of the sales have been abroad, and production at the new factory in Gwent is now running at 200 a month.

In the Future

FUTURE Technology Systems, the fast growing Scottish builder of business micro packages, has selected the CP/M operating system from Digital Research for its Series 88 16-bit machines. FTS has lodged a £55,000 contract for the supply of Digital's products, including CP/M and MP/M operating systems and CP/M graphics.

BP buys Philips

BP OIL has opted for three Philips Maestro Systems worth £330,000 to improve productivity of its programmers and analysts at the north London administrative headquarters. The equipment includes 72 workstations to give instant access to documentation, as well as word processing and an electronic diary.

Menswear deal

DATA General OEM Pennine Computer Systems has just installed a retailing computer set-up for a 220-branch national chain of men's clothing shops. The central computer, a Data General 16-bit Eclipse, is based at the Leeds head office of Greenwoods Menswear, with Kimball Tag readers for automatic updating of stock and sales details in the branches.

Oil package

SCICON has sold a package of Fortran programs to an Irish company for optimising the refining of crude oil. The Irish Refining Company of Cork has bought Scicon's MINI linear programming package to select the cheapest production methods that produce the required amounts of each type of petroleum from the original crude.

Systems house puts Ada in perspective

by George Black

A LEADING British systems house is trying to pre-empt the Ada language project with a set of software tools available over two years earlier.

Systems Designers of Fleet has already installed its Perspective tools – promised in last year's annual report – at three UK sites, including British Aerospace, and it has orders for a further six.

BA's information technology manager said it had opted for the SDL product in preference to the Californian Telesoft's Pascal system or its Ada environment. It will use the software in collaboration with a German and an Italian company on the design of a new aircraft.

SDL plans to work with at least one British university on the use of Perspective, which could prove to be one of the cornerstones in the national Alvey programme for "fifth generation" computer technology. Technical director Geoff Holmes said it would be happy to throw the product into the Alvey pool.

Perspective is the outcome of 25 man-years of work, backed by £510,000 from the National Computing Centre's software products scheme and the Industry Department through the British Technology Group.

It consists of a set of tools to reduce the cost of developing advanced software applications in the telecommunications and control engineering fields. It operates on the Ada principle of source code hosted on a DEC Vax supermini with machine code being downloaded to micros based on either the Intel 8086, Motorola 68000 or Zilog Z8000 chips.

JACKSON . . . Starting point for Alvey.

Project manager Ken Jackson, who was involved at the Defence Ministry in the design of MASCOT and in trials of Software Sciences' SDS toolsets, claimed Perspective was much the most active database controller on the market.

"It's a good starting point for the Alvey programme and does a lot of things the directors will be interested in," he said.

A major problem in the realtime applications industry has been lack of trained staff, which creates an urgent need for productivity aids. The US Defence Department plans to enforce the use of standardised Ada from 1985, but commercial concerns are growing impatient as the backlog mounts (see Software File, page 11).

Perspective incorporates many Ada principles and extends the current real time standard Pascal. SDL international sales manager Elwyn Wareham insisted it would not be superceded, even when Ada at last becomes universally accepted.

Meanwhile SDL ploughs ahead with its input to Ada via the Ada Group Ltd consortium and proposals to the EEC Esprit committee.

Customers fume with Intelligence

by Claire Gooding

USERS of the popular financial modelling package, MicroModeller, are up in arms against supplier Intelligence UK. The committee of the user association is advising its members – including big names such as Shell, BP, and Trusthouse Forte – not to renew subscriptions to the support and update service because updates have not been carried out as promised.

They say that under the SUS agreement they are paying £200 a year each for three updates a year, plus a hotline help service to users and a quarterly magazine. It is alleged that Intelligence UK has received more than £200,000 for support, not all from user association members. The newsletter has appeared only once.

User association chairman Philip Morris said: "The main reason for our existence is that the product should continue to be enhanced. There are a lot of other packages on the market now, including Micro FCS from EPS Consultants and the product from Ferox, so I'm anxious to protect our investment in MicroModeller. It's in our interest to keep it the number one package."

The group is evaluating Modeller 16, Intelligence's new alternative to MicroModeller and the system supplied through Dataflex for the US Ferox. Intelligence's problems stem from its acrimonious break with Ferox, original supplier of the modelling package, and with Dataflex, which was established by ex-Intelligence staff.

Intelligence enhanced the Ferox original with an implementation for the lucrative CP/M market and is the owner of the MicroModeller name. Ferox receives only small royalties from Intelligence's successful sales of MicroModeller.

The three-year agreement between the two firms runs out in December and Intelligence is anxious to gain its independence through its efforts on the new 16-bit version.

Ferox president Richard Hykes said: "Intelligence has lost its exclusive rights to our product and won't receive any more updates from us."

Intelligence has lost key staff men to Dataflex including David Low, Phil Benge and Terry Thompson.

Intelligence managing director Ashley Ward said: "Only 70 to 80 of the user association have the support service and we have reduced the cost by paying their membership fee for them. The criticism is not fair, because they have been expecting a scale of service they simply haven't paid for."

WARD . . . Managing director of supplier Intelligence UK.

Honeywell pushes mini market links with IBM

by John Kavanagh

HONEYWELL is pushing its links with IBM in the mini market. A new release of the operating system enables users to slot Honeywell's DPS6 minis more readily into networks using IBM's SNA network architecture.

At the same time, the release includes links into Honeywell's own DSA network architecture, plus new features aimed at end users with no computing experience.

Honeywell says release three of the GCOS Mod 400 operating system is "the biggest-ever extension of DPS6 capability".

On the SNA front, there is a file transmission facility, said to be the first from any non-IBM manufacturer. It enables data and text files to be passed from an IBM host computer to DPS satellites.

A document transfer facility handles the transmission of documents through Honeywell's DSA and IBM's SNA from the Honeywell OAS office automation system running on a DPS6.

New for end users is a range of menu-driven features and help facilities plus Honeywell's own financial modelling package, Infocalc. This system can be used with the office automation system word processing facilities to produce management reports from models.

Other new features include a Pascal compiler, which conforms to International Standards Organisation specifications, plus links between the office automation system electronic mail utility and DSA. This means office automation users can access data processing files and systems, for example to incorporate master file data in documents.

With the new release Honeywell has confirmed the introduction of a query language, foreshadowed last autumn. This language is part of the DPS6 data management system. Honeywell says this system's database manager, transaction processor and query language are compatible with similar products running on its mainframes.

Honeywell says the announcement gives users a "software platform for the 'eighties".

A further bid to boost the company's network architecture is coming later this month with the launch of a Honeywell microcomputer which will fit into DSA.

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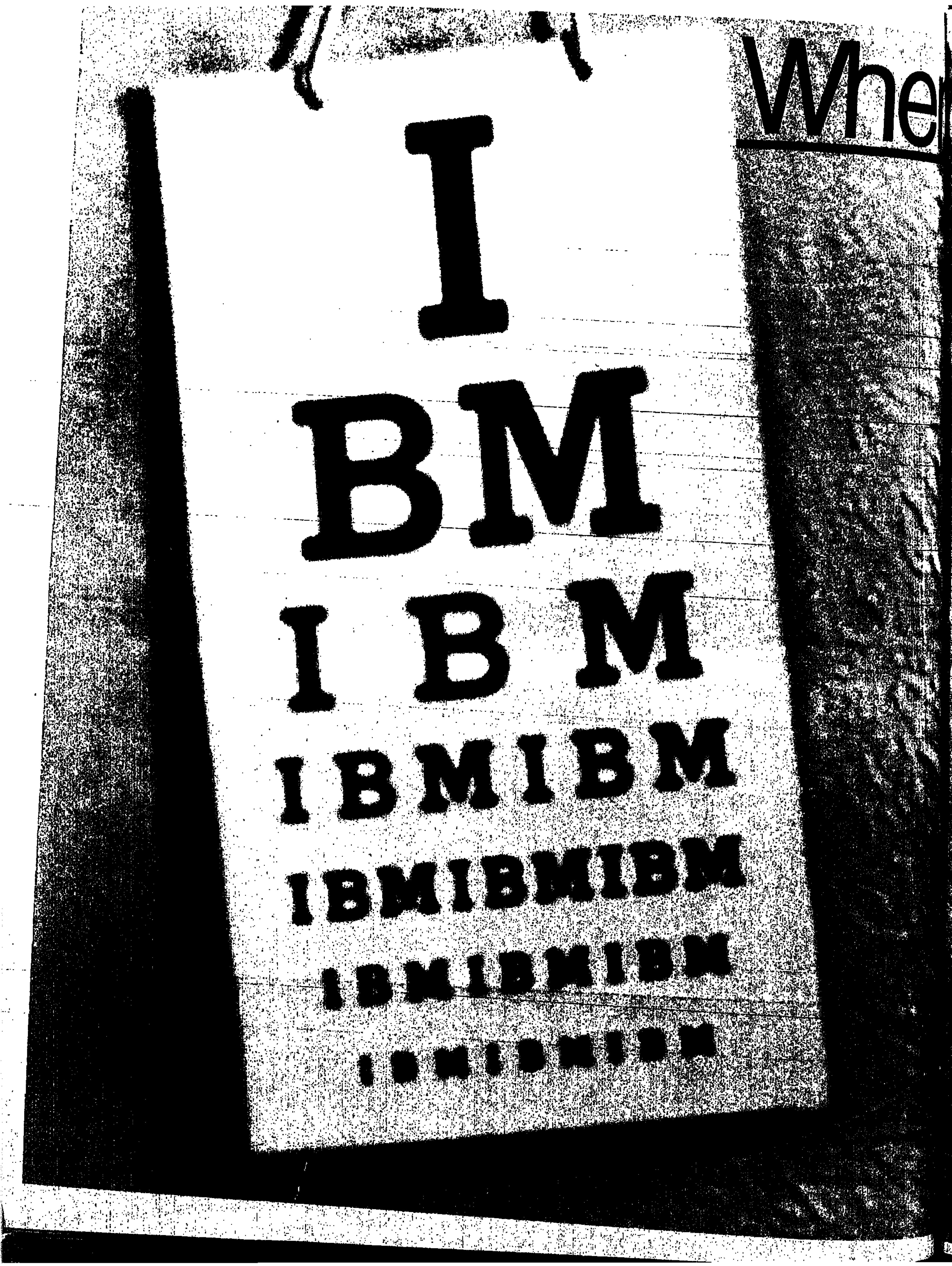

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THE INTELLIGENT CHOICE.

Scicon pushes into robust networks

by Claire Gooding

A SMALL UK company is linking up with BP-owned giant Scicon to make a joint assault on the world market for robust networking systems.

Beale Electronics of Windsor is developing Hilan, a high integrity networking system using fibre optics which, unlike Ethernet, will be able to cope with the dust, noise dirt and heat of the average industrial environment.

Scicon is to sell the Hilan system worldwide for Beale, and has established that the product will bring in £300 to £400 million over the next three years.

The lack of a robust and totally reliable system is what has held back most of the major potential industrial users of networks.

"The whole industry has been looking for a way of tying together process computers in plant" explained Nick Beale, managing director of Beale Electronics. "The objectives are very different from Ethernet and we do not see ourselves as a competitor. In fact we realise that marketing is important: that's why we're selling this on the back of Ethernet."

Scicon International is to fund the development of software and hardware for the network.

The specifications to which Beale will work are rigorous: Hilan will use fibre optics rather than standard Ethernet cable, but implemented in such a way that users will be able to retain all their existing Ethernet software. As this is likely to represent a very large user base by the time Hilan is released in 1984, the system will have a significant advantage over non-Ethernet compatible systems.

Hinet must be able to recover completely from any crash, must guarantee a response within milliseconds, and must be able to work in a potentially explosive atmosphere. It will keep going even if a cable breaks or one of the machines on the network goes up in flames. It therefore promises to be far more reliable than Ethernet, which cannot tolerate the conditions to be found in most manufacturing plants, warehouses and factories. Ironically these are exactly the places where a networking facility is often badly needed.

A chemical plant – and the sort of site where Ethernet cannot work, and Hilan will.

Unions link to spread the IT message

by John Riley

THE Civil Service unions have banded together to teach their members information technology. A series of five-day courses to instruct permanent union officials in the implications of new technology started last week, and the officials will be expected to pass on their new knowledge to members.

"This style of education is common in Scandinavia", said Barry Reamsbottom, the Civil and Public Services Association's head of education, but it hasn't been tried on any scale in the UK. We have been strong in training shop stewards but not in getting the information through to members."

The Council of Civil Service Unions is co-ordinating the programme, but three unions are particularly active. These are the Society of Civil and Public Servants (mainly executive officers), the CPSA (clerical officers), and the Civil Service Union (messengers etc.).

The catalyst for the awareness campaign was the scrapping last year of a national Civil Service new technology agreement which was rejected by the CPSA and the SCPS. Those two unions insist that agreements include two principles: a reduced working week with the introduction of new technology, and a clause guaranteeing no job loss. They rejected the compromise agreement that there would be no redundancies (as distinct from no job loss) because of new technology.

The result of the failure to agree was a policy statement issued recently by the CCSU which affirms that there is now no possibility of a national agreement and that each Civil Service department will have to negotiate its own new technology agreement.

"This has sharpened the movement towards education, and there is now more urgency to devolve it down through the structure of the unions," said Reamsbottom.

Initially about 180 officials are taking part in five-day courses at the eight trade union study centres for shop steward training, which have been built up by the TUC over the past decade. A larger batch of courses is scheduled for the autumn.

Unions have had problems getting agreements in government departments, according to Reamsbottom. "In several cases we have been close to getting departmental agreements, for example with the DHSS and the Department of Transport, but last December the Treasury intervened and instructed departments not to enter agreements on the basis of no overall job loss clauses," he said.

Reamsbottom says that only five new technology agreements – which affirm the intention not to lose jobs but to provide a better service for the public – have been made to date, and these have been for projects within departments which are limited in scope.

They include a pilot scheme for pensions at the Department of Education and Science at Darlington, the use of microprocessors to check files at the Passport Office, Scottish Courts administration, payroll in the Home Office and general cataloguing in the British Library.

HANLEY . . . Trying to break the mould.

Perkin-Elmer says it has cheapest 32-bit

by Nuala Moran

PERKIN-ELMER has set its sights on the small business user with the launch of what it claims is the cheapest entry level 32-bit mini.

The 3205 is also claimed to be the first 32-bit machine to be based on a single board. The printed circuit board measures 15×17 inches.

For a bare machine the price is £8,460, but OEMs can get them for £5,250 at the maximum discount rate. A basic system with 32 Kbytes of memory, 50 Mbytes of disc storage and eight ports costs £18,710.

The 3205 is aimed to compete with the top of the range 16-bit machines and has a Whetstone rating of 6 mips.

Traditionally Perkin-Elmer has catered for the scientific and technical market, but Brian Hanley UK managing director, explained that P-E was trying to break this mould and go for volume sales in the commercial market.

The 3205 will be offered to OEMs under P-E's partnership plan, a scheme started in March to gain volume sales in the commercial market. This deal includes discounts on hardware prices, free support and training, half costs on approved advertising and providing sales leads.

At present 30% of P-E's commercial sales are through OEMs and 70% direct, and Hanley wants to reverse this. He has rejected the idea of increasing business by getting into supplying applications software as other manufacturers have done, because this is not P-E's area of expertise.

Negotiations are going on with 90 OEMs and so far six have been signed. Hanley feels that the decision to go for the OEM market was timely as P-E's competitors have turned attention to end users.

Boy 14 teaches adults in software design

by Tom MacSweeney

FOURTEEN-year-old Mark Lande, of Presentation Brothers College, Cork, has been described as "brilliant beyond his years" for his overall victory in the Memory Ireland Computer competition for Irish schools.

He produced a program designed to show how computers can be applied to teach Morse code, particularly for those learning radio transmission.

Lande is a third-year student in secondary school and is already proficient in Basic. He is learning Pascal and has a thorough knowledge of the 6502 assembly language.

At school he has worked on a variety of computers, but is most proficient on the Commodore Vic-20 and Commodore 64 machines.

He also teaches adults computing on a part-time basis at the Cork Microcomputer Centre. He specialises in software design and also teaches introductory digital electronics.

The program enables the user to learn Morse by hearing the signal via a TV set speaker and as a series of dots and dashes on the screen. It also sends in Morse and can be linked to a radio transmitter. It is written in Basic on the Commodore Vic-20 colour computer.

With a few minor changes, Lande says, it would function on most computers.

The judges said the project was so good they had to check several times to ensure that it came from a boy of Lande's age.

IBM wins court veto

by Howard Karten

IBM has won a preliminary round in its fight to keep Cybernex Corp of San José, California, from transferring to third parties expertise which Cybernex allegedly took illegally from IBM.

The ex-IBM staff who recently started Cybernex stole IBM thin film technology to do so, IBM alleges.

Cybernex recently licensed two California firms, Computer and Communications Technology Corp of Santa Barbara, and National Micronetics of San Diego, to use its technology.

IBM last week won an order restraining the transfer pending further action in the suit.

Under the judge's restraining order, Cybernex may manufacture its own thin film heads until a "special master" is appointed by the court to advise it on technological aspects of the case.

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MURDOCH . . . "After a bigger share of the market".

STC opens orders by phone system

by Donald Kennett

COMPONENT distributor STC Electronic Services is the first to open its order entry system to dial-up access by its customers with new software.

Front-end software, which provides a dialogue suitable for first-time users and which supports asynchronous terminals, has been implemented alongside the company's existing components database on its Honeywell 6600 DPS mainframe. This makes it the first major distributor to offer electronic ordering facilities to non-dedicated terminals, according to general manager Brian Murdoch.

Any of the company's 6,000 account customers that owns or is prepared to obtain an asynchronous terminal and a modem or acoustic coupler can dial into the system, get quotations and delivery times, and place an order for same day despatch. Any casual purchaser with a credit card and a terminal can use it too.

The system also allows STC's rivals to check on its stock levels and re-ordering schedules, although Murdoch is confident that the benefits of the system will far outweigh this disadvantage.

"We are after a bigger share of the market," he said. "Even a 1% increase would be significant to us."

STC is the UK's largest distributor and holds 15% of the market. It sells 40,000 products from transistors and passive components to £20,000 computers.

The company went for asynchronous terminals rather than the synchronous type dedicated to the one service because of the cost that would have been involved, either for STC or for its customers, of installing them everywhere they might be wanted.

Synchronous terminals support on-screen forms and other facilities that make a system simple, quick and reliable to use. They become economic particularly where an online system is in constant use or when the business being conducted has a consistently high value – neither of which applies to component purchasing.

Viewdata was also rejected as involving expensive terminals of a type not routinely found on customers' premises. The fact that Prestel's gateway to external computers was not yet available throughout the Prestel network also meant that there was no saving to be made on telephone call charges.

Developing the new system had cost £30,000, mostly for designing and implementing the user interface.

Outside calls come into one of three groups of telephone lines – one for each of the three transmission speeds handled – and are handled by software which is just one of 70 applications using the company database. The database is accessed from 152 synchronous terminals in-house, 40 of which are for entering component sales.

■ Viewdata has been chosen as the medium through which Llanelli Radiators will keep its customers and suppliers informed of its stock levels. The company's aim, like STC's, is to increase its market penetration. The viewdata software it will use is being supplied by Debenhams Interactive Systems.

ICT shares row rages

by Kevin Cahill

AS International Communications Technology (ICT) prepares to reveal its first working all-in-one telephone/data device, the row about ownership of some of the company's shares rages on.

ICT is an international development company, based in the Bahamas, and with its shares listed on Luxembourg Stock Exchange.

In the middle of last year ICT revealed that its subsidiary, Triple M Corporation, had developed an all-in-one telephone data device for sale to PTTs at under $1,000. At the time this was a superb price and the device had more facilities than any comparable device either on the market or promised for delivery.

The Triemco 2000, which was designed for Triple M by the prestigious Stamford Research Institute, was to be manufactured in Hong Kong by the Conic Group.

To get the Conic agreement under way required an agreement between ICT and Conic which in turn required the consent of the shareholders represented by Tring Hall, the licensed share dealer which had privately placed a large portion of ICT shares in the UK.

This consent was not forthcoming as the management of Tring Hall changed, and the value of the ICT shares became a key issue in the survival of Tring Hall itself.

Last week the existing chairman of Tring Hall asked the Fraud Squad to investigate dealings.

But as he did so a new bidder for Tring emerged in the form of Haverford Securities, chaired by Norman Cork of prestigious accountants Cork Gulley.

ICT has promised to demonstrate the Triemco 2000 to *Computer Weekly* in two weeks' time.

Ex-Cii HB boss slates French 'butchery'

by Jack Gee

THE French Socialist government's computer industry policy has been condemned by Jean-Pierre Brulé, former chairman of Cii Honeywell Bull, who was ousted from his job in 1980 by former President Valery Giscard d'Estaing.

Brulé left the French computer firm after challenging the Conservative Government's decision to transfer Compagnie Generale up a 35% share of Olivietti.

Interviewed by the French computer publication *Ordinateurs*, Brulé vigorously attacked the nationalisation of the major firms involved in information technology.

He said: "I am unfortunately compelled to express regret that, instead of improving France's position in the mass market for computer technology, software and distribution, the government's action in 1982 was aimed solely at concentrating the means of research and production."

Brulé said the decision to restructure microcomputer manufacture around Cii-Honeywell Bull's offshoot R2E at the expense of Thomson and CGE had meant "butchering the industry by politicians against the advice of industry".

Complimenting his successor, Jacques Stern, on the industrial strategy he has announced for Cii Honeywell Bull, Brulé added: "The French information technology industry can no longer permit itself to make any mistakes."

Recalling Saint Gobain's entry into Olivetti, Brulé said : "This was a financial fiasco. Our principal shareholder's money was used by an opponent to strengthen his position to our disadvantage.

"I have to take off my hat to Signor De Benedetti (managing director of Olivetti). This experienced businessman brilliantly got everything he wanted – and for nothing."

Brulé argued that distributed systems offered the only hope for the future of France's computer industry.

New de facto standards are coming into existence on a world scale with compatible hardware, software and peripherals. The real battle between manufacturers is being fought at the level of standardisation."

US giant puts $500,000 centre in Cheltenham

by Nuala Moran

US ELECTRONICS conglomerate Bunker Ramo has invested between $500,000 and $600,000 in the establishment of a technology research and development centre in Cheltenham. The new company is called Bunker Ramo UK.

It has taken on the development staff of Linotype Paul, the phototypesetting company which was recently shut down by its German owners.

Twelve ex-Linotype staff are now employed by Bunker, including programmers, supervisors and engineers. It is intended to increase staff to 20 as soon as possible. In 1984 this number is expected to go up to about 30.

The role of the UK division will be to provide systems engineering as part of the new product development organisation. At the moment it is supporting activities in the US by producing local and wide area network communications interfaces for Aladdin, a range of new products which will include office automation packages with industry specific applications.

David Hearn, UK product development manager, said: "At the moment we are purely supporting what's happening in the States, and they wouldn't be able to meet demand without our assistance." The UK division will eventually be responsible for system and product development directed to the international market

The US-based company produces computer systems for the financial market.

Hearn explained that one function of the technology centre in the UK would be to make the modifications necessary for the banking and finance systems to be applied in the UK and Europe.

BAUDOUIN . . . "Working on interfacing more".

HP pushes factory automation links

by John Riley

HEWLETT-PACKARD last week pushed out its links to the top European factory automation computer makers.

The company launched a new software product to interface industrial automation programmable controllers to its HP 1000 A-Series of minicomputers. And it reaffirmed its commitment to OEMs by launching a compact integrated version of the HP 1000 A-Series.

The software product, called PCIF/1000 (Programmable Controller Interface) can link Allen-Bradley, Siemens and Telemecanique controllers, and, according to HP, reduces the tedium of communication protocol programming.

"Those are the three main European market leaders for programmable controllers," said Jean-Pierre Baudouin, product marketing manager of HP Grenoble, "and we are working on interfacing more." The price ranges from £4,054 to £7,002.

The compact, repackaged HP 1000 A-Series, called the Micro/1000 family, brings the minicomputer performance down to microcomputer size.

The price ranges from £10,122 for the 1 mips Micro 26 system to £21,758 for the 3 mips Micro 29, including integrated peripherals. It is aimed primarily at OEMs in the industrial automation market – "but also at anything that needs a real time aspect", said Baudouin.

Two other software facilities were announced – an applications package, called HP QDM/1000 for statistical quality control, and a revised version of the RTE-A.1 operating system, which will be supplied free to those with the older version.

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CW1

Abingworth sets banks an example

WHEN banks talk, as they frequently do, of the risks of high technology investment they could do worse than look at the track record of Abingworth plc.

Abingworth is a venture capital investment company, resident in a relatively small and unpretentious suite of offices opposite the Economist building in London's St James St.

The company, founded in 1973, has recently gone public by selling four million of its 10p shares to the investing public and financial institutions for £3 each. In order to go public Abingworth released a prospectus which lists many of its major investments, and which also gives a record of the realisations it has made on shares in which it has invested in the past.

Out of 28 sales so far Abingworth made a gain, in some cases a very substantial gain, on its investment and what is more important it has made losses in only two disposals.

This is a better rate than was predicted for venture investment by Frank Kenny, the managing director of investment company Inishtech which recently went public. Kenny broadly suggested that for a good venture firm a nil return on around 20% of the investments would be normal.

This is in sharp contrast to big bank estimates that in the UK about three out of four companies will fail in the early years.

Taking a selection of Abingworth's computer industry investments and subsequent sales the company made $3.8 million on shares in Apple Computer, shares which cost $39,375. This is a gain of about 100 times on the original cost.

The sale of part of Abingworth's stake in Mohawk Data Sciences realised a profit of $994,926 on an investment which cost $147,180. This is a more normal realisation of profits in the mid-range of a venture capital company's portfolio, and is repeated in the $2.08 million profit on the sale of a stake in Standard Micro systems which cost $373,004.

Other significant computer industry investments and their disposal were Digital Communications Associates which showed a $261,624 profit on shares which cost $63,576, and Penta systems which showed a profit of $254,000 on an original cost of $110,000.

According to Peter Dicks, one of the founders of the company and a current director, Abingworth has increased the value of its assets per share by an order of just over 10, in a 10 year period, from 28.09p a share in 1974, to 307.44p a share now. The entire proceeds from the current sale will go to enable the company to make further investments, Dicks said.

At the moment Abingworth has a total of about 60 investments, 85% in the US and the remaining 15% in the UK and Hong Kong. The company has been actively looking for high tech companies in the UK in the past year or two and Dicks points out that Abingworth has made investments in Tim Keen's Keen Computers in Nottingham, and in Bradford based Microvitec.

Unlike the traditional UK investment company or trust however, Dicks says that Abingworth will get involved where appropriate, with its target companies. The involvement can be as limited as the provision of business contacts, or as extensive as board membership and direct advice.

This is typical of the way the really good venture capital companies in the US work, and it is obvious that Abingworth has adopted more of the US stable than just shares in the odd US corporation. How does Abingworth find the companies in which it invests?

DICKS . . . Will make further investments.

This question causes Dicks to pause a little, but the reply is partly what you'd expect.

Some introductions come from business acquintances he says, some from professional advisors, some from papers like *Computer Weekly*, some from other venture capitalists.

In the Prospectus Abingworth lists some of its larger investments which are still retained on the books. The list of 15 companies is led by four companies.

First of all, Apple, in which Abingworth holds 500,000 shares, which the company bought for $140,625 and which is currently valued at $25,968,750. The amazing Apple is however, closely followed by Standard Microsystems Corporation, where Abingworth hold 5.6% of the equity at a cost of $200,000 and currently valued at $10.2 million.

Third of the major successes is Digital Communications Corp, where for an investment of $559,799 Abingworth has now got a stake worth $4.4 million. Finally, the residual stake in MDS held by Abingworth is worth $2.6 million, against a cost of $377,820.

Why big profits can be bad news

by Philip Hunter

LARGE pre-tax profits represent wasted opportunity for a company intent on fast growth. They give to the taxman funds that could have been spent on research and development.

This philosophy has been successfully applied for some years by London-based Package Programs, which supplies the financial community with software for minis and mainframes.

The company has reported a profit of just £5,000 for the six months ended March 1983, which is only loose change compared with the turnover of £1.74 million.

Managing director Roy Taylor does not seem too interested in profits at the moment, and points to the fact that the company has expanded its workforce from 50 to 70 in the last year.

"This cost £200,000 before the new staff become effective," Taylor says.

"But the significant thing is that for the third year in a row, revenue has increased by 50%, which is above the industry average."

Projected turnover for the year ending September 1982 is £3.9 million.

TAYLOR . . . No to pig profits.

Ericsson offers four million shares in New York

SWEDISH telecommunications supplier L. M. Ericsson has followed fellow Scandinavian company Norsk Data on to the New York Stock Exchange, but for a somewhat larger funding.

Ericsson, which is the world's largest supplier of digital telecommunications outside the US, is offering four million shares at a price of $62.5.

If US financiers take up the offer, and the indications are that it will be many times oversubscribed, the Swedish giant will have raised $250 million, the largest foreign flotation ever on the NY exchange.

I. M. Ericsson is already 20% owned by investment interests in the US and it is likely that the money raised will be used partly to make acquisitions in the US.

Ericsson took over the old Datasaab DP interests in 1981 and the process of integrating the company is still going on. Swedish sources say that Ericsson will relaunch the Datasaab company later this year, in Scandinavia, and in the UK, with new products and an enhanced image.

High speed start

WHILE Inmos continues to claim the headlines in its search for cash one of its former designers Rahul Sud has started his first venture.

Called Lattic Semiconductor Corp and based in Portland, Oregon the object is to supply very high speed semiconductor devices.

Success follows ACT

ACT IS undoubtedly one of the industry's successes on the Stock Exchange and that success is predicted to continue in the results due this month.

Industry analyst Neil Barton at Stockbrokers Cooke Lumsden is confirming the company's own forecast of £2 million profit for 1982/83 and is forecasting a major advance for the next two years.

According to Barton, and provisoed only by the way the company's new Apricot performs in the market place, ACT should show profits of around £5 million this time next year, and £12.5 million in 1984/85.

Apricot is ACT's own desktop computer which the company is building to market in support of the hugely successful Sirius machine.

According to Barton, the Sirius 16-bit microcomputer, which was designed and built by Chuck Peddle, formerly of Commodore, has contributed £1 million to ACT's profit this year.

Next year, Barton foresees a contribution of £2 million from the Sirius and related activities, based on sales of 18,000 to 20,000 machines.

ACT, which is currently headed by Lindsey Bury, a former banker who rescued the company some years ago, won much of its market lead due to the late appearance of the IBM PC, and indeed also due to the late appearance in the UK of the Digital personal computers.

This delay allowed ACT, based on aggressive marketing, to establish an almost unassailable user base for the Sirius according to Barton, who reveals that in February this year ACT sold 1,125 Sirius machines, against 490 IBM PCs

BURY . . . ACT's head.

During 1982 the company actually sold 7,000 Sirius micros, and is currently spending £1 million on an advertising and TV campaign in support of the Sirius.

Barton notes that ACT is currently planning a whole new range of communication and terminal emulation packages to be launched later this year.

The first of the new products will be a shared resource system for use in a multi-workstation environment and capable of supporting up to 64 micros. ACT will also begin selling the Ashton Tate integrated back end relational database system later this year.

Company News is compiled by Kevin Cahill

Look at telecomms to know Japan

FOLLOWING the record sales and profits recently announced by Japan's major computer manufacturers *Computer Weekly* asked Alex Stewart, technology consultant for Stockbrokers Henderson Crosthwaite for his views.

Stewart recently visited Japan and last year he wrote one of the very few technical reports* on Japanese technology to appear in the UK.

In his report last year Stewart identified NEC, followed by Sharp and Matsushita as the three companies most likely to benefit from the current boom in technology.

This year's profit figures have more or less borne out Stewart's predictions and he says looking in a 20 year time frame, that those are still the three leading contenders to become a major competitive challenge to the US, and to be the key Japanese companies domestically.

To understand what will happen inside Japan, Stewart says that you have to look very carefully at what is going on outside the country, in particular you have to look at the communication strategies of the national PTTs.

This will give a direct insight into how changes in the local telecommunications environment in Japan will enable services to develop which will provide the funding and growth opportunities for the Japanese IT companies.

Although much of Stewart's conversation is focused on telecommunications, he is a firm believer in the concept of "Integrated Network Services", which he sees as the foundation on which the telecomms and computer industries of the future will develop.

Technology, he says is spawning technology, and the only framework which makes sense of it all is the INS one.

He amusingly quotes an American manager who described videotex, as "the solution to a problem the customer did not even know he had".

Developments in Japan itself will be led by the Nippon Telegraph and Telephone which, Stewart says, has been winning increasing international recognition for its research achievements and which Stewart sees as at least as advanced as Bell Labs in the US.

NTT currently has two key projects underway, one to develop a supercomputer and the other to produce a one megabit chip.

The target for the super computer is 60MIPS and by the year 2000 Stewart says that NTT plans to have all domestic communications based on optics.

Stewart describes NEC as the most integrated of the Japanese suppliers of telecomms teleprocessing and new media equipment.

After NEC, the next most promising of the INS type suppliers is Sharp. Following his recent visit Stewart reckons that Sharp, although it is smaller than either Fujitsu or Hitachi, is in a better position, in terms of its strategies, to benefit from the opportunities of the new media age.

After Sharp, Stewart has selected Matushita Communications, an independently quoted company within the Matsushita group, which is the current recipient of much of the parent group's new INS high technology business.

One company identified by Stewart and still little known in the West as an IT company is Pioneer, which is currently involved in a major transformation of its audio business into video and data discs.

*Integrated Network Systems. From Henderson Crosthwaite & Co. 01-283 8577.

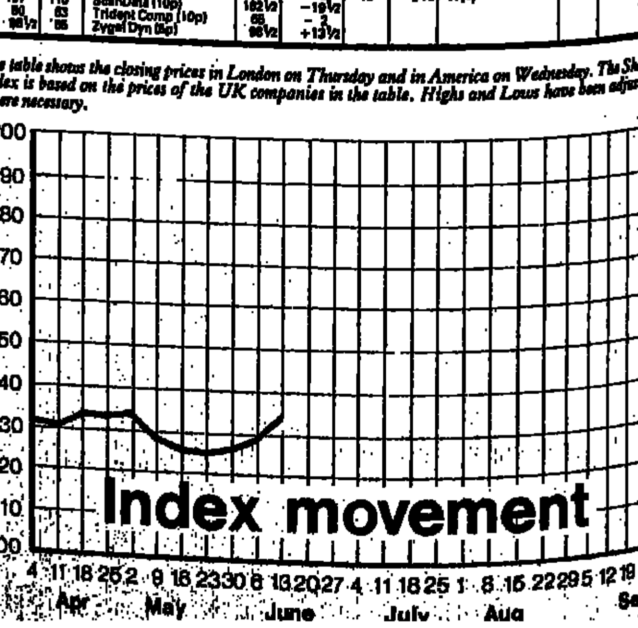
SHARES TABLE

The shares table, which is specially compiled for Computer Weekly, shows selected computer companies that reflect the state of the computer industry.

Date 9/6/83 Index 134.84 Change +4.8

Pence 1983 High	Pence 1983 Low	London Stock Exchange Stock	Pence Price	Pence C'nge	$ 1983 High	$ 1983 Low	US Stock Stock	$ Price	$ C'nge
422	240	ACT (App Com) (25p)	472	+12	56	30¼	Amdahl	55¼	−¾
68	41	B. Bov Kem (25p)	68	+6	60	28¼	Apple Inc	60	+1¾
183	124	Chubb (20p)	184	+1	60	34⅞	Auto Data Pro	38½	−½
178	120	Cole Group (25p)	138	+2	55½	43¼	Burroughs	55½	+⅝
280	152	CASE (20p)	280	+70	18	11⅛	Comp Auto	15	−½
666	540	De La Rue (25p)	590	–	23	17	Comp Sciences	19½	+2⅝
323	284	Extel (25p)	293	−8	12¾	9½	Comshare	11⅞	−¼
624	411	Ferranti (50p)	624	+50	58½	38¾	Control Data	57⅞	−¾
248	192	GEC (5p)	248	+8	48¼	37¼	Cray Research	47⅜	+2
82	68	ICL (25p)	70	+4	67½	41	Data General	59	−1⅜
58	41	Kalamazoo (10p)	51	–	24½	18¼	Datapoint	18¾	−¾
370	278	Kode Int (25p)	363	+3	127¾	99½	Digital Equip	111⅞	−4⅞
498	270	Memec (10p)	498	+23	38¾	23½	Elec Data Sys	38¾	+2⅛
190	144	Muirhead (25p)	160	+1	16¾	5¾	Gen Automation	15¾	+¾
646	458	N'market (1981) ($0.05)	645	+5	39¾	19¾	Gould	38¼	−¼
2600	967	Norsk Data	2600	+100	51	36¼	Harris	43	−1
320	207	Office & Elect (25p)	220	+13	87¾	74	Hewlett-Packard	87¾	+2
1175	710	Philips Lamp (F1 10)	1175	+187	122½	86	Honeywell	118½	−1
787	638	Plessey (50p)	787	+133	60¾	40¼	Intel	60⅞	+2⅜
50	32	Quest Auto (10p)	32	–	115¾	95½	IBM	113	−⅝
594	418	Racal Elect (25p)	564	+28	69½	54¼	Litton Ind	67½	+2⅝
384	223	Rediffusion (25p)	342	−5	17⅝	14	MDS (Mohawk D)	14	−⅝
282	225	Star Comp (10p)	265	+7	31¼	19	MSA (Mgmnt Sci)	31	−⅝
435	275	Systems Des (10p)	425	+15	16½	12¼	Mngmnt Assist	15¼	+⅞
637	418	Thorn-EMI (25p)	637	+10	18	9½	Modular	18	+⅞
177	138	UC&T (50p)	144	−6	130½	84½	Motorola	130½	+7⅝
		Unlisted Securities			43	28¼	National Semi	43	+3⅛
118	75	Bus Comp (10p)	118	+3	124	87½	NCR	119½	+1
130	115	Cifer (10p)	122	–	32	24	Perkin-Elmer	30¼	−½
218	148	Consuk (C&F) (10p)	180	+2	44¼	28¼	Prime	30	−⅝
180	158	Int'europe Tech (20p)	173	−1	55	44½	Raytheon	55	+3
54	27	JSD Comp (5p)	44	−½	34⅞	25¼	Signal	34⅞	+2⅛
75	70	MMT (5p)	72½	+2½	38½	33½	Sperry Comp	37½	−⅝
235	180	Memory Comp (IR10p)	228	+1	24½	18	Storage Tech	20½	−1
345	205	Micro Bus (10p)	345	+30	31¾	24⅛	Tandem	30¾	−1⅛
330	265	Micro Focus (10p)	330	–	62¼	50¼	Tandy	58½	−3⅛
388	310	Microgen (10p)	366	–	171	133¼	Texas Inst	168½	+6⅛
200	136	Miles 33 (10p)	188	+3	25	18	Tymshare	22½	−⅝
217	158	NMW (£1)	208	−4½	40¾	31½	Wang Lab B	40	−¾
120	81	Rolfe & Nolan (10p)	98	−3	16	9½	Wyly	16	+1
187	110	ScanData (10p)	162½	−19½					
80	63	Trident Comp (10p)	65	−2					
98½	55	Zygal Dyn (5p)	96½	+13½					

The table shows the closing prices in London on Thursday and in America on Wednesday. The Share Index is based on the prices of the UK companies in the table. Highs and Lows have been adjusted where necessary.



Merger leads to software consultancy

TWO American subsidiaries of GEISCO, General Electric Information Services Company, are to be merged to form GEPSCO, General Electric Professional Services Company. They are LTI Consulting Services and SDC, and will have a joint staff of £1,500 and $80 million turnover; they will trade as software consultants based in New York.

It's all Smalltalk

XEROX'S Peter Deutsch and Glen Crasner presented the firm's Smalltalk-80 high level language and operating system to a meeting of 70 business representatives at a London hotel last week. They were accompanied by Chris Macie, author of the Smalltalk-PC version of the language.

Robotic advice

CAP has been appointed by the Industry Department as a consultant for firms wanting to use robots for flexible manufacturing. It will advise on how to integrate robots, machine tools and computerised production planning systems.

Midas transfers

MIDAS, the banking package designed by BIS Software for IBM's System 34 and 38 machines, is being transferred to the new System 36 machine. The system, which is used on around 300 sites worldwide, will run on the new mini with colour graphics, electronic mail and personal computing facilities.

Upgraded DASD

COMPUTER Associates, the American software house with $28 million turnover, has upgraded its direct access storage device manager, CA-MANAGE/DASD. Release five will allow automatic migration of data from one direct access storage device to another in program-readable form. Computer Associates is one of the largest independent firms in the IBM and plug compatible market.

Prime revises

PRIME has revised its mini operating system, Primos, with new features for security, disc space management and support for 2,250 peripherals. Tighter system protection for the Prime 50 series will be provided by individual access control lists instead of directory passwording.

Bridge the sales

SPHINX, the new micro software marketing organisation set up in Maidenhead, Berks, has signed up to sell Ethernet-based products for Bridge Communications of California. Bridge founders Bill Carrico and Judy Estrin, ex-Zilog employees like Sphinx's Pamela Geisler, are local area network specialists.

Network deal

PLEXUS, the Californian micro maker, has made a deal with Texas network specialist Percom Data to link IBM-PCS through an Ethernet local area network. The agreement helps to create an IBM-PC network running applications under the Unix operating system.

Catalyst impact

APPLE-IIs could become more easy to sell through a new applications manager called Catalyst, developed by Quark of Denver, Colorado. One Apple dealer, DBM of Bristol, reports that Catalyst is already making an impact on sales of the previously slow-moving micros.

JACKSON . . . Took the chance to tear into database approach.

Structured design rivals meet

TWO evangelists of structured systems, Ed Yourdon and Michael Jackson, faced each other at a London conference last week. It was their first meeting on the platform since an encounter in New Jersey six years ago – the atmosphere between them was polite but tense.

At the Pergamon Infotech conference on the future for structured methodologies, Yourdon referred to time wasted on religious battles between their two factions and in silent schism with the rival school or database technology. He proposed a truce so that all parties could acknowledge each other's good ideas.

Jackson, while he did not reject the overture and agreed to appear again with his old opponent, took the chance to tear into the database approach to software, of which both men are long-standing critics.

Jackson told the international gathering: "Database descriptions of the real world are not at all in the right terms because they have no time dimension. A relational database is totally divorced from anything you could possibly want to say about the real world."

A Jackson structured design would give a time-ordered description of events, he said, and time-ordering was absolutely fundamental to profitability. He included all currently available fourth generation languages in his attack on database systems.

Many delegates, however, seemed sceptical, which suggested that JSD was not yet a working method, that its approach was not radically different from others or that the limitations of database technology were already generally admitted.

Yourdon prefaced his address with the remark that the discussion was like a congress of Catholics and Jews to debate the definition of God.

YOURDON . . . Problem is political and managerial.

Technology itself, in any case, was by far the smallest part of the problem facing the business computing world, he said.

"The overwhelming part is political and managerial. It may be well into the next decade before we can say we are all using reasonable methods of systems development."

There was now a widespread awareness of structured techniques in industry, but fewer than half the top companies employed structured analysis.

"It's a sobering thought that top management – the critical people – don't care," said Yourdon. "If we all have to come back here in 1998 to talk about methodology, we shall have blown our entire careers."

Root plugs Unix gap

by Claire Gooding

ONE of the biggest gaps in the fast-growing Unix market has been plugged by Unix specialist Root Computers with a "friendly front end" interface to the operating system.

ROOTmap is designed to allow non-expert end users to bypass the highly technical guts of Unix to run their applications.

It provides a series of menus, English commands and help messages, plus function keys to guide the user straight to applications instead of ploughing through complex Unix commands.

Vendors and manufacturers who have plumped for Unix as the standard operating system for 16 and 32 bit systems have long recognised the problem that it was built by programmers for programmers. One of the barriers to its acceptance was the difficulty the user met of finding his way around. Any facility he is likely to need is there somewhere, but it is very rarely called what is expected, and there are no Help facilities to cushion expert users.

"Unix is very good for programmers; it doesn't stand in your way if you know what you're doing," explained Mike Banahan, technical manager for Unix training company Structured Methods. "Unix was organised for use by experts, so the naive business user needs a different level of communication.

"One of the advantages of Unix is that it does allow you to change the interface."

There have been other attempts to give Unix a user-friendly interface, including the impressive menu shell with which Fortune surrounded its Unix implementation. Root, however, stands some chance of fulfilling its claims to have launched the "standard" user interface for Unix, since it has had a head start over competitors.

Dominic Dunlop, technical director of newly-formed Unix specialist Sphinx, said: "I saw the Root menu shell two months ago, and it struck me that when it was fully documented and packaged it would be one of the very best products of its sort available. Sphinx, which was formed to market Unix-based products, is currently negotiating with Root.

Managing director of Root David Saunderson is confident that ROOTmap will quickly be recognised by users as what they've been waiting for, and consequently become a standard interface.

"The significant advantage of ROOTmap is that it will go on the front of anything – payroll, ledgers, and the electronic mail software," he said.

DUNLOP . . . One of best products available.

Scottish firm to sell Expert-ease to US

AN EXPERT systems program, written for the micro by a team led by Edinburgh University's Donald Michie, is soon to be sold in the US and Europe by a Scottish software house.

The program, called Expert-ease, a spreadsheet rule-generator for the IBM-PC and Apple-11, was devised by Michie's firm Intelligent Terminals. Written in UCSD-Pascal, it is to be distributed mainly to large corporations by Export Software International (ESI).

Set up by ex-ICL manager Sandy Blackie, ESI achieved celebrity as the backer of Toolbox, a utility collection for the Sirius.

Toolbox is now being promoted in the US by Professional Data Systems of San Diego, California. Professional Data Systems is run by ex-Victor dealer and mail order king Richard Rubin, who now has representatives in 65 of the major American cities and will be selling Toolbox both for the Victor and the IBM machines.

Meanwhile, ESI is on the lookout for other homegrown products that can be repackaged and sold profitably to the American market. The Expert-ease system is aimed at allowing managers in big companies to develop complex programs to handle financial, training and management problems.

ESI is also taking on Keystar, a keyboard developed by Edinburgh University's Wolfson Microelectronics Institute. The idea is to convert micros running the Wordstar software into dedicated word processors with a 56-function keyboard.

Modula-2 could carve a real slice in time

MODULA-2, the language designed by Niklaus Wirth to replace Pascal, could carve out a substantial slice of the real time software market.

Almost 300 firms worldwide have now installed it. A significant factor in making their choice seems to have been the problems of developing Ada compilers.

Professor Wirth of Zurich High School created Pascal in response to the bureaucratic tangles surrounding Algol-68. Now, however, some experts are saying that Modula-2 is his way of cutting through the Ada thicket.

While it is unlikely that Modula-2 could halt the Ada steamroller, fuelled by the US Department of Defence, it could benefit from an "Ada blacklash", with users worried about hitches in the Ada timetable and the sheer complexity of the DoD specification.

One indicator is that publisher Springer Verlag in Heidelberg has now printed 15,000 copies of Wirth's textbook, which has gone into the second print of the second edition – in spite of a cautious start by Springer with a small run.

A big attraction for learners has been the availability of relatively cheap compilers from Wirth in Zurich.

Volition Systems of Del Mar, California, which began by promoting it on the Apple II and III, is now selling it on the IBM-PC, the 68000 chip-based Sage II and IV, as well as Texas Instruments Z80 and 8080-based machines.

Software File is compiled by George Black

Germany to lead in office systems

WEST Germany will overtake Britain to become the biggest European market for office applications software by 1990, according to a new international business research report*.

The electronic office is creating such demand for applications that the European market in 1990 will be more than 100 times larger than today's, says Frost & Sullivan, a New York survey organisation.

The market is expected to double every year up to at least 1990, from $30 million in 1983 to $5.2 billion in 1990.

West Germany will have a $1.6 billion market, with Britain second.

★ *Office applications software products in Europe*, published by Frost & Sullivan, 104-112 Marylebone Lane, London W1M 5FU, price $1,250.

8100

RODE — new DPPX/DPCX versions of this excellent data entry package now available with:

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GMS

Speed-up for 68000 machines

by John Riley

LONDON-BASED Bleasdale Computer Systems and Massachusetts-based Pixel announced upgrades for their Motorola 68000-based Unix microcomputers last week.

Increased speed is the keynote of Bleasdale's BDC 680A machine, and is achieved with a new 48 Mbyte 5¼in Winchester disc drive from Atasi which has a disc seek time of 30 milliseconds.

"Today's user is intolerant of any slowness in a system," said managing director Eddie Bleasdale, "but there's no way he can complain with these speeds."

Bleasdale chose Atasi in a novel way. "We placed placed orders with all the companies which claimed this performance, and saw who was in a position to deliver. Of those we chose the fastest."

Other enhancements include easier system cooling, and optimised software to select data off the disc more quickly. The price for the basic system with I/O ports but no terminals bundled, but including Unix, is £8,000.

Bleasdale expects sales of £150,000 to end users over the next few weeks, and that does not include OEM sales.

The American machine, the Pixel 100, which saw its first US shipments last July, has been upgraded with speedier version of the 68000 and faster memory chips. These give a 30% increase in performance — at no extra cost, according to Pixel's UK marketing manager Jan Klin.

BLEASDALE . . . "Today's user is intolerant of any slowness".

And an even better price/performance machine is on its way. US customers will soon take delivery of the Pixel 80, which uses the the 68000 family.

It should reach the UK in the autumn.

Pixel was originally a division of Instrumentation Laboratory, alongside IL's analytical and biomedical instrument activities. Founder Tom Rosse sold out to Allied Corporation, then rebought Pixel as a separate spin-off. Most of the senior management are still with Pixel, although general manager William Southworth left in April after he lost to Rosse in the buy-out bidding.

Immediate attacks rugged portables

DATA capture and billing machine specialist Immediate Business Systems is out to break into the rugged portable micro market. Nomad, a machine styled as "the microcomputer that goes where the job is," takes elements of IBS' Portable Billing Machine.

IBS, based in Milton Keynes, hopes the British-built Nomad will make a dent in a worldwide market it sees as unexploited — mainly through a lack of awareness out there of the existence of micros that can cope with wide temperature ranges, dust and water without giving up. There are already such machines, notably rival British contender Husky from Coventry-based DVW Microelectronics, but market awareness of their capabilities seems low.

The Z80L processor — L for low power — runs under an IBS-written executive that supports normal Microsoft Basic. Programs written in the Microsoft Basic under CP/M on desk-top machines back at base can be down-loaded into Nomad. The executive and Basic reside in 16K of EPROM. There is 32K of RAM plus 64K, 128K or 256K of bubble memory arranged as if it were disc. Prices range from £2,236 to £3,136 for 64K and 256K of bubbles.

IBS offers no application packages, and will rely on the systems houses through which it will sell the Nomad to provide packages users do not want to write themselves.

At first IBS will concentrate on the UK market, where it is looking to sell hundreds of machines in 1983, followed by the US and France, where it has sister companies. Next year it is planning on building and selling in thousands, and enhancing the machine with more memory and interfaces.

IBS has just signed up as the main UK distributor for the Fujitsu bubble cassettes.

A large market IBS will be going for is the British military, says IBS sales and marketing manager Chris Pickles. Rival DVW already has several large contracts for the Husky connected with the Rapier missiles and various tanks, but Pickles sees no reason why the military should not buy Nomad too.

A new star is born

pulsar

16 BIT BUSINESS SOFTWARE

PULSAR business software is the creation of ACT – the company behind the Sirius 1 and recognised leader in 16-bit personal computing.

The new PULSAR range, developed by ACT at a cost in excess of £1 million, takes full advantage of the power and expandability of 16-bit computers.

It is inherently faster and more powerful than traditional 8-bit software.

And it is a true 16-bit range, designed and developed by ACT's own software engineers.

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UK leads US in use of small computers

by John Riley

THE UK is a year ahead of the US with the general acceptance of small computers. That is the view of Liverpudlian Herbert Martin who, after 16 years in the US, has returned as vice-president of European operations for US microcomputer manufacturer Onyx/IMI.

"The US is a large place with a large market, but on a per capita basis the number of small computers sold doesn't look so large. I have been amazed at the utilisation of personal computing in the UK and at the knowledge of people in unrelated industries who are using small computers in personal type applications," he said.

"The reason the UK is ahead of the US is that online service bureaux advanced more rapidly in the US because of the Bell system communications network, whereas in the UK people have been more independent. That has greased the skids for small computers in the UK."

Martin was formerly president of Mercator Business Systems, which produced 16-bit micros running the Oasis operating system. Mercator was acquired by Onyx last December and its micros added to the Onyx family of micros, which were among the first to support Unix.

MARTIN . . . "Amazed".

Onyx will expand later this year into the lower end of the high-performance micro market with two products. One is a single board 68000-based machine running Unix System III. The other product will be based on the upcoming Intel 186 and will handle MS/DOS and CP/M-86 operating systems.

Martin's new job as vice-president of Euroean operations will be to promote the image of the company and build up its support base. Onyx sells only to three systems house distributors, Scan Data, Thame Systems and Keen Computers, and has no plans to sell directly to end users, or to expand the number of distributors.

Cut out key strokes

by Philip Hunter

ACCOUNTANTS and solicitors could soon eliminate the tedious keying-in of information needed for billing clients. A small portable computer from London-based Technology for Business, called Timelog, works like a stopwatch, and enables a solicitor, or any professional fee-earner, to record automatically time spent on a billable activity.

The new

would be done by passing the light pen over a bar code printout of the client's name and the activity.

The machine, which costs £900, allows 30 different activities, and up to ten different categories of client.

Typically a solicitor has one rate for client being given free legal aid, one for rich clients, and one for poorer clients.

The company has also intro-

The one and only R.

Cullinet's relational database for IBM computers. It's called IDMS/R.

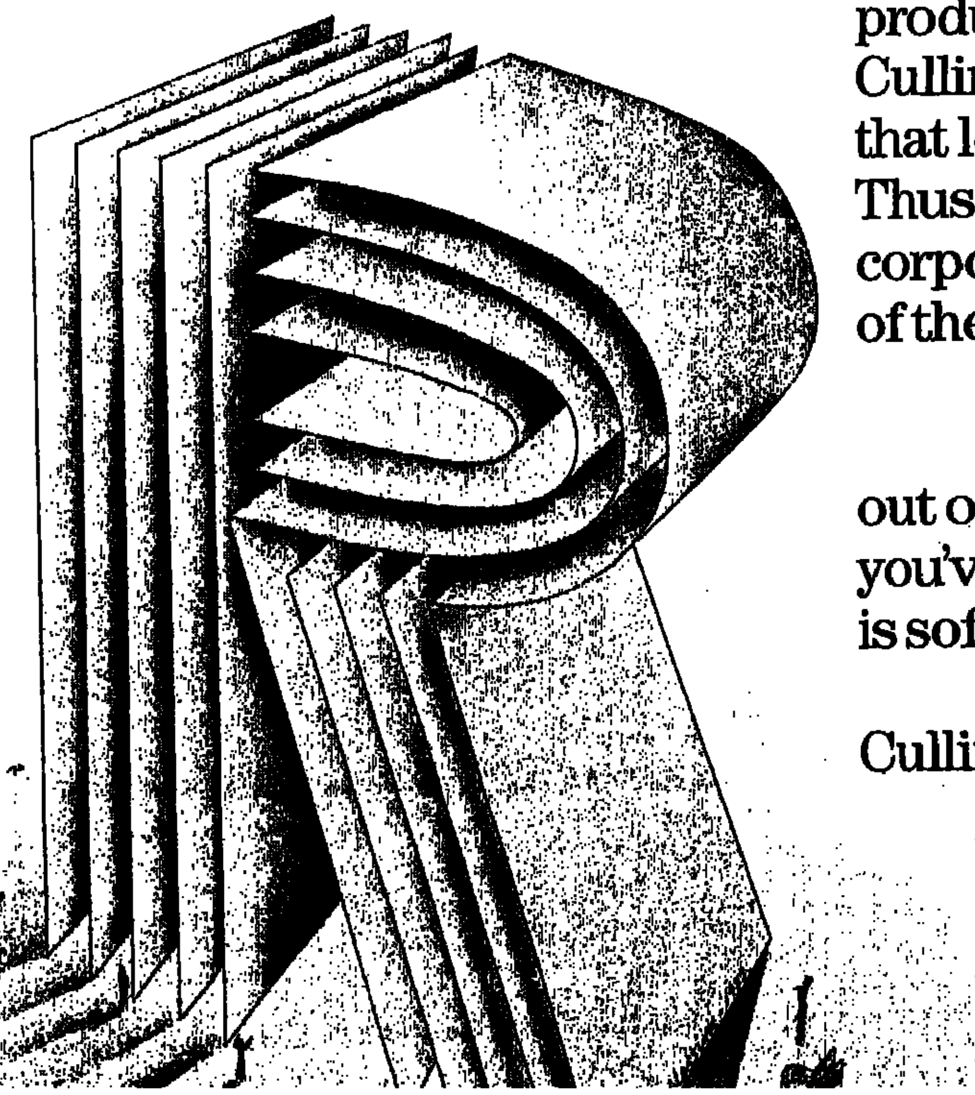
IDMS/R is the single solution to the two sided problem of providing useful database applications for both end users and production tasks.

This is how it works:

As a true relational database, it allows you to select data from separate and unrelated files; join it, then project it in ways that make it possible for you to handle end user applications and unstructured requests for information quickly, directly and intelligently.

As a superset of Cullinet's proven network database, IDMS/R allows you to handle high volume, production applications with the network technology best suited for the job. It's this unique marriage of architectures that makes Cullinet's relational database stand apart.

Where others have tried to propose relational or psuedo-relational components that exist separately from the production database, Cullinet's is the only one that lets both work together. Thus serving the whole corporation by serving all of the needs within it.



IDMS/R.

To get everything out of the database that you've put into it, the answer is software.

And software is Cullinet.

Cullinet

PLATFORM

Why British industry is ripe for major growth in buy-outs

MANAGEMENT buy-outs, ranging from small £100,000 purchases to transactions of £20m and more, have emerged in the past two years as a strong revitalising force in British industry.

Perhaps the single most striking new dimension has been the conclusion in Britain of a growing number of multi-million pound buy-outs. While these had become commonplace in the US in the 1970s, in Britain almost all had been at the smaller end involving a few hundred thousand pounds.

In December 1980 Truflo, the Birmingham engineering subsidiary of Wilmots Breedon, was bought for about £7m by a group of investors comprising Truflo's management and some of the City of London's leading investment institutions. And at the end of April, 1981, the senior managers of Keep Brothers – the Birmingham-based foreign trading house with a turnover of more than £30m – bought the company for over £3m; until the buy-out, about 50% of the shares were in family hands.

Other important management buy-outs have included Ansafone, formerly a subsidiary of ACC; Sir James Goldsmith's Cavenham Group which sold its Cavenham Confectionery subsidiary to four of Cavenham Confectionery's directors, who have renamed the company Famous Names; stockbroker Vickers da Costa whose directors and senior management led a buy-out scheme; the £53.5m government-approved sale in October 1981 of the State-owned National Freight Company to its management and staff; plus more recently the £18m buy-out of the Electrical Division of Stone-Platt Industries in May of last year and the purchase of Radyne from Forward Technology Industries just before Christmas, 1982.

When are management buy-outs the answer? Let's first look at situations where the senior executives of a large diverse group have agreed privately that it would be sensible to sell a division or subsidiary which has earned a steady profit but has become peripheral to the group's main business activities at a time when the board is looking for ways to reduce the group's borrowings – a situation facing many British companies these days.

Usually, the first idea is to seek a corporate buyer. But sometimes there are no such buyers – or none willing, or perhaps able to pay cash. There could be a monopoly difficulty, or the sale to a competitor could bring problems if the division being sold is an important supplier to, or customer of, other group companies.

It is not very surprising, given the recent adverse economic climate in Britain, that management buy-outs on this side of the Atlantic are growing apace both in number and size of investment

On the other hand, a sale to a group including the management can often meet the case very neatly. A good cash price can be obtained, and the upsets and possible defections which can often result when the divisional managers learn they could be sold to another company are avoided.

Much the same applies where the seller is a private shareholder company. The problems of selling can be much reduced if the management is co-operating fully in the sale. And in such situations the seller, who may himself have created the business and hired and trained the managers, is pleased to see the company carry on as an independent business, thereby giving his proteges a chance to accumulate capital.

At the same time, the seller receives a fair price and can arrange his affairs to the benefit of his heirs at a time when the political climate is relatively favourable to such deals.

Since most management teams of five or six individuals in Britain cannot muster more than £100,000 to £200,000 between them, the objective must be to ensure a significant personal commitment by the managers while not encouraging them to overstretch themselves. This in turn means that the purchasing company is normally financed with a substantial amount of gearing in the form of bank debt or subordinated debt from the investing group which also provides most of the equity finance.

A typical example of the financial structure of a management buy-out is given as follows for the XYZ company:

	£
Purchase price	**2,850,000**
Extra for fees, expenses, etc.	**150,000**
	3,000,000
Bank loan (5 years)	**1,500,000**
Redeemable preference shares (6-10 years)	**900,000**
400,000 'A' ordinary shares (£1.25)	**500,000**
100,000 'B' ordinary shares (management)	**£1,100,000**

Five managers obtain a total of 20% of ordinary equity with an incentive scheme whereby if they meet their targets for pre-tax profits over five years their equity stake rises to 30%.

Other features are that managers can offset the interest on the money borrowed to buy the shares against income for tax purposes; and managers can roll-over capital gains.

Buy-outs have been a strong force in British industry.

The main point to note is that some of the loans – not the top ranking bank loans – carry with them the right to subscribe for a proportion of the common equity as, of course, does the preferred stock, with the rest of the equity allotted to the management and the organisers of the operation.

Sometimes the seller is prepared to take part of the consideration in deferred form, for example through a loan stock, and this may be crucial since it both gives confidence to investors and reduces the amount of new investment money needed.

There are, of course, a host of variations and some of the financial structures devised are ingenious and complex. They usually involve a substantial amount of initial gearing, since only thereby can the common equity be reduced sufficiently to allow the management a significant "incentive" share at a price they can afford.

Businesses suitable for management buy-outs must have a history and prospects of profits and cashflow which would persuade investors that in future they will be able to service and repay the loans and redeem the preferred stock. Solid assets help to reassure investors, as do a good spread of products, a well established market share and relative invulnerability to sudden technological change.

The business must itself be relatively debt free and, above all, have proven management.

In general, well established cash-generating companies with experienced management are the best candidates for buy-outs.

These criteria can be met in many, indeed most, sectors of industry. Candover has organised management buy-outs in valves and aerospace components, confectionery, kitchen furniture, telecommunications, air conditioning and heat treatment equipment.

In Britain the pension funds, insurance companies and investment and unit trusts are now the main source of investment funds and they seem to be increasingly ready to support buy-outs. Perhaps as important, this process accords with the British temperament. We seem to work more happily and successfully in relatively small groups, and to respond best to strong management in close personal relationship with the workforce.

The government, too, supports the incentive philosophy and wants to find ways of giving practical support.

It is, perhaps not very surprising, given the recent adverse economic climate in Britain, that management buy-outs on this side of the Atlantic are growing apace both in number and size of investment.

Finally, we certainly have managers in British industry with the qualities needed to be entrepreneur owners.

Candover Investments is in the forefront of this major management and financial development in Britain as the country's leading specialist in large management buy-outs. Formed in September 1980, it has already arranged eight management buy-outs in Britain involving over £60m. Operating out of 4-7 Red Lion Court, London, Candover's shareholders are some of Britain's leading financial institutions.

Roger Brooke

Roger Brooke is chief executive of Candover Investments, a leading UK management buy-out specialist.

DOWNTIME

The acceptable faces of new technology

IT was one of those gunfight at the OK TV studios programmes. Black Geoff Howe, of the notorious Ma Thatcher gang, Doc Owen from the gang of four (since, of course, reduced to two, with the Doc about to be upgraded above his gang-mate), and Deadeye Denis Healey, once the terror of the Lazy R ranch down in Deadman's Gulch, Westminster, were ready to shoot it out before the TV audience.

Deadeye fired first. With barely a flicker of expression, he raised an eyebrow and took careful aim at Black Geoff.

Showing no mercy, he outlined his gang's plans for creating new jobs on the range.

Almost immediately, Doc Owen opened up too, catching Black Geoff in the crossfire.

"Our plan for jobs is the only answer," he growled.

Things were looking bad for Black Geoff. But just in the nick of time, the cavalry arrived in the form of TV technicians obviously bribed by Ma Thatcher.

Ducking behind a microphone, Geoff shot back: "But look how we've created new jobs, and helped high technology industry!"

And there, on the back projection screen was a familiar face. Was it John Wayne? No.

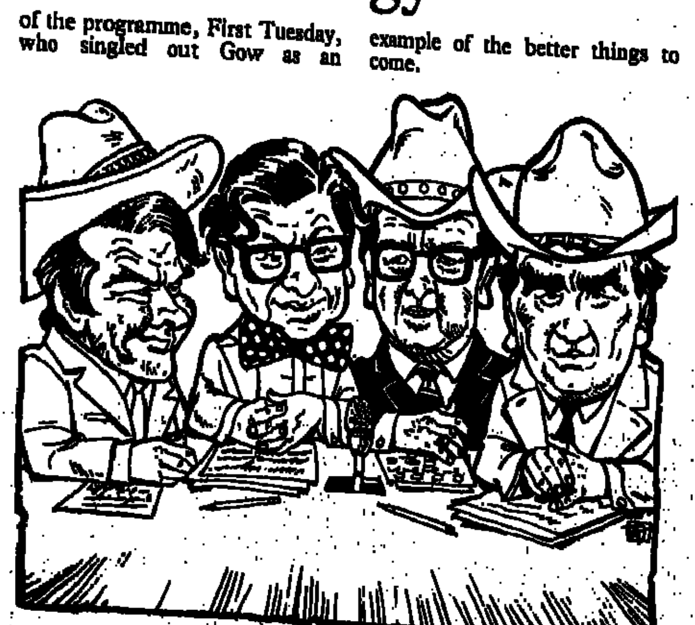
Gary Cooper? Not he either.

It was none other that ex-Systime boss Big John Gow, living proof of the success of Ma Thatcher's regime of terror, recipient of a meagre £8 million rescue bid from CDC.

As the smoke cleared, the anxious viewers looked for the tell-tale bullet holes which would indicate which of the gunfighters had lost.

Doc and Deadeye sat impassively. Black Geoff too had survived, but not without injury.

His face was covered with egg – not a pretty sight. His one fallback would be that it was ITV director of the programme, First Tuesday, who singled out Gow as an example of the better things to come.



Maggie's lack of vision

THAT advocate of high technology, the charming M. Thatcher, displayed a rather tenuous grasp of one aspect of it on TV the other day.

On the BBC's Election Call phone-in programme, The Leaderene seemed a little disoriented as she took the first call.

"Where is he? I can't see him. I can only hear him."

Chairman Sir Robin Day suggested a reason for this: "That's right, he's on the telephone."

Sweet nothing

STUDY if you will this photo on the right. The charming young lady is being offered a rose by the dinky little robot. How sweet. Just an ordinary pic from Zenith Data Systems. The accompanying text is even worse. For one thing, it's in German. But the Computer Weekly German expert tells me that the rough translation runs something like: "Here ve see der wunderbar robot, Hero I, showink his gut taste."

BT's late spectacular?

"THE world of office technology and micro automation is littered with spectacular claims and even more spectacular crashes." – *BT Merlin recruitment ad.*

"We have the technology, the product range, the service support, and, of course, the client list . . . with more than half a million business subscribers we have a head start when it comes to hot leads." – *Same BT Merlin ad.*

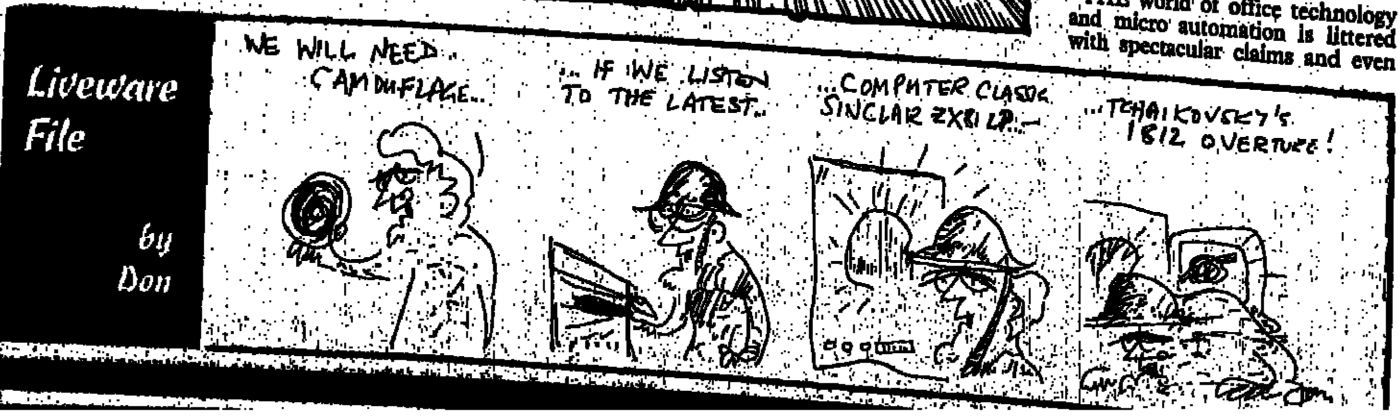
"First class training . . . Top rewards . . . High rise prospects . . . sharpening old skills to a new razor edge of professionalism." – *Still the same BT Merlin ad.*

Well, BT's made a good start with the spectacular claims. Will there be an even more spectacular crash?

Chad

10 YEARS AGO

FROM COMPUTER WEEKLY OF JUNE 14, 1973: A new range of computers, the Argus 700 series, was announced by Ferranti . . . UK computer services business achieved a 15% increase in 1972, reaching £79.7 million . . . A clear indication of the kind of fourth generation mainframes expected from the major manufacturers came with details of IBM's Future Systems machines.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ComputerWeekly
Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS
Thursday, June 16, 1983

Act now on software piracy

THERE is at last a realistic hope that an international agreement can be reached on the copyright of software. A meeting taking place in Geneva this week, under the auspices of the World Intellectual Property Organisation, will spend five days trying to agree on a software treaty.

Software piracy has been a headline grabber for some years, particularly with the onslaught of the microcomputer. But the computer industry has been slow to push its case forcefully either nationally or internationally.

It was as long ago as 1977 that the Whitford Committee made its recommendations on copyright. The departmental committee said that although the law of copyright probably provided protection for software, it would be better to remove any uncertainty by enacting legislation.

Another four years passed before the last Thatcher government published its July 1981 Green Paper which accepted most of Whitford's recommendations. The Green Paper called for explicit legislation that would give computer programs and data the same protection under copyright law as literary works.

When the Green Paper was released, Reginald Eyre, Parliamentary Under-Secretary of State at the Department of Trade, called for a "wide public debate which will enable the government to finalise its views".

A measure of how seriously the computer industry took the problem was given a year later when Barney Gibbins, Barney Gibbens and others. It is also undermining the meeting in Copenhagen that only three of the 190 members of the Computing Services Association responded to the software copyright Green Paper.

Some of the inertia of which the industry has been guilty of might be explained by the complexity of trying to formulate legislation on software copyright. Perhaps the computer industry itself could understand the problem, but initiating the legal profession in the peculiarities of "inventing" a program may have seemed too daunting a task.

Much of the work on copyright in this country has tried to encompass software within the definition of a literary work. That path always seemed to be a compromise, and attempts to extend the Forgery and Counterfeiting Act of 1981 to software never seemed an adequate response.

The Exxon Case heard by the Court of Appeal in June 1981 showed the difficulty of the "literary" approach. Exxon had appealed against the dismissal by the High Court of its claim that the word "Exxon", as an original literary work, was entitled to a copyright. The Court of Appeal ruled against the appeal, stating that the word could be termed original, and also a work, but it was not literary.

What the World Intellectual Property Organisation (WIPO) has done is to draft a law exclusively for the software industry. The organisation, which is an international union for the protection of industrial property, goes well beyond existing copyright legislation. It has also put copyright where it belongs – in the international arena.

A good deal of credit must go to the Computing Services Association, which has been steadfast in its recognition that software copyright is essential to the health of the UK software industry. The CSA has made its views strongly known through the Department of Trade, the UK body which has been co-ordinating the national response to the work carried on by WIPO.

Doug Eyeions, chairman of the CSA, has pushed hard to ensure that the European Computing Services Association would be represented at Geneva this week. He has stressed that it is a "very important conference", and it would do well for the industry as a whole to take note.

Bearing in mind the length of time it has taken for the European Convention on Data Protection to take hold, it is clear that any draft treaty agreed on in Geneva will certainly have no easy passage in gaining acceptance by individual governments. All those who have doubted and procrastinated must now make their voices heard.

It would be a sorry indictment indeed if any agreed treaty on software copyright received the same half-hearted reception as was the case with data protection.

Unauthorised copying of software is theft.

1984 and all that . . .

THIS week's example of the strange things people say about computers was sent in by Ed Dodman of Leeds, who wins £5.

> Sinclair, which has pioneered the way in cheap easily accessible home computers, has developed its own language called Basic.

Yorkshire Evening Post

LETTERS

Cautious steps by legal profession

THE National Law Society (*Computer Weekly*, May 12) is investigating ways in which information can be used to advantage within the legal sector and Nuala Moran has reported that Professor Campbell emphasises that the society's aim is not to "apply technology regardless."

It is this kind of cautious and considered approach by the legal profession which draws attention to the importance of involving the potential user at all stages of the technical development programme.

The government has given support to the universities and polytechnics in providing a high standard of training in the processing of information: it is, however, important to appreciate that if the recommendations made by the Alvey Committee are to be implemented in the wider acceptance of the new facility, the users' requirements are paramount.

There is a growing concern for the quality of information, and it will be the special responsibility of those with considerable experience in the different professions to compare available systems and to evaluate the content of databases if these are not to be seen simply as sophisticated and costly card indexes.

It would appear, there, that encouragement might be given now to those at the peak of their professional career towards a greater degree of involvement in the application of the new technology where their contribution would be invaluable not only in their own particular field but also in the promotion of British industry.

DOROTHY ROSS
Technical Information Officer
Manchester.

Practical view of SSP

IT is certainly getting rough, with accusations flying around about what is and is not right with one or other of the many SSP systems on the market.

It seems to me that all the systems' suppliers got something or other wrong with their understanding of SSP. Mainly, I feel, they did not understand the routine operation of payroll to which SSP has to be closely linked.

The purists who stuck to the letter of the SSP law should get some understanding of how PAYE and NI are actually handled in practice as against the strict rules, and they would have a shock.

The one group who got it exactly right were all those lovely users out there who were not bamboozled at all. Readers will have seen the forms of my SSP system (*Computer Weekly*, January 6). Well, I sold over 3,000 kits of these forms right up to the SSP starting date, and hardly any since.

More surprising is that the number of phone calls I have had raising queries on the operation of SSP can be measured on one hand. My local DHSS office also reports no great rush of queries. So much for all the confusion and difficulties – it's just not occurring like the axe grinders said it would.

I do have to add fuel to the disagreements by taking issue with Mike Coppleston (*Computer Weekly*, June 2) on the question of the daily offsetting of other payments against SSP. He is quite right that this is a fundamental requirement of the legislation. But the requirement is for the offsetting of all payments in respect of the day for which SSP is paid, not just occupational sick pay. The total of all payments made in respect of a day can only be known in the payroll system so I submit offsetting is a payroll and not an SSP function.

What makes this legalistic view laughable is that failure to offset breaks no laws. The employer is entitled to recover the SSP from the government whether he offsets or not so he has a free choice if he wants to overpay his employees. Some employers may well decide that the incidence of loss in their circumstances is so low as not to be worth trying to prevent.

I think I have made my point that there is a practical as well as a legalistic view of SSP.

Turning to a practical legal point; Employers with a "direct interest" in a trade dispute can be excluded from SSP entitlement. The legal question arises as to how direct is direct. In conversational terms insurance officers' decisions have always interpreted the expression to mean "virtually automatically". Now the Court of Appeal* has had occasion to consider the matter and decided that the words mean "very direct".

So unless the individual will receive some benefit automatically from the outcome of a trade dispute he does not have a direct interest in the matter. That might have always been the law (the same words are used elsewhere than in SSP) and obvious, but it's not how the law has been interpreted by insurance officers in practice.

CLIFF DILLOWAY
Stroud.

**Priske v DHSS (FT Commercial Law Re-[illegible] 1983)*

Sick pay exemptions

I WOULD like to correct an inaccuracy in my letter (*Computer Weekly*, June 2) and also expand on the point in response to a number of questions that have been raised.

My reference to an "insured sick pay scheme" being exempt from NI and PAYE should have read "a wholly contributory scheme". From April 6, insured sick pay schemes have been subject to NI and PAYE and amounts payable are classed as earnings and must be offset against any SSP due. A wholly contributory sick pay scheme funded by employees is not classed as earnings and any SSP due must be paid in addition. This can lead to some diminution of SSP as such payments do not count as earnings for calculation of the NWE, the average of earnings on which the rate of SSP calculation depends.

A sick pay scheme with contributions from employer and employee causes some difficulties. SSP should only be offset from the proportion of the sick pay payment attributable to the employer's contribution – an administrative nightmare.

The critical nature of the offsetting rules contained in Schedule 2.2 of the SSHB Act 1982 are achieving major significance with the movement towards optimum qualifying day agreement under which substantial improvements in SSP benefits can be obtained. Under one agreement we have recently examined, the average SSP payment for short illnesses of 4.9 days is effectively increased from £14 to £36. This is important not only to employees with no contractual sick pay scheme but to those employers who already have generous sick pay arrangements which go towards discharging any liability of that employer to pay Statutory Sick Pay.

M. D. COPLESTON
Managing director
Information Management Services
Exeter.

Quicker answers

I WAS not surprised to see yet another attack on British Telecom (*Computer Weekly*, May 19) but, I am left wondering what are the writer Andrew Thomas' mathematic qualifications, or has his article been influenced by Mercury?

Thomas states that "the longest delay encountered by subscribers is not the time taken for an operator to look up a number, but the time taken for them to answer the phone". Can't he see that by reducing the average call by 12 seconds means the next call is answered 12 seconds sooner. This is equivalent to a 30% reduction in waiting for a call to be answered, while the staff reduction is only 25%.

The reduction would occur over a number of years.

Quite obviously the service quality will be improved not only by the reduction of the "waiting time" but also by the computerising of the service.

R. J. HEWITT
Director, Hi-Tech Computer Systems,
Nottingham.

Two-way deal

I WOULD like to correct what I hope was a mis-print in your article on the recently announced IBM CMA scheme (*Computer Weekly*, June 2).

CMG is keen to pursue negotiations with IBM and would like to think that any agreement will be somewhat less ephemeral than is indicated by the two days mentioned in the article; in fact a two-way deal is what we are after.

R. J. WHITE
Managing directer
CMG
Croydon.

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HOLIDAY CAMPS

Computers at the poolside are a frequent sight in Club Med villages, as Jack Gee reports

Let the tourists learn while taking a break

WHEN Gilbert Trigano, head of the Club Méditerranée holiday empire, took over the Sicilian village of Kamarina from an unsuccessful competitor three years ago, he discovered a minicomputer in the accounts office. The machine had been used by the previous operator to log financial failure. For Trigano, it provided an ingenious and profitable brainwave.

Trigano's aides tried to discourage him when he announced a plan to install a workshop at Kamarina where holidaymakers — or Gentils Membres (GMs), as Club Med calls them — could learn the applications of computer technology. "Computers in a vacation village! They'll feel they are back in the office," the critics protested.

But Trigano, who will shortly give up his chairmanship of Club Med in order to mastermind the 1989 Paris Exhibition, got his way. Convinced that the GMs' curiosity would be whetted, he sounded out computer and terminal manufacturers and French Telecom.

They agreed to provide the equipment for holidaymakers to communicate with France's Teletel videotex network, acquire a basic knowledge of how to use a computer and, for young and old alike, play video games.

The holidaymakers themselves put the computers to work on a variety of tasks, such as calculating and displaying the results of yacht races and tennis tournaments on the terminal screens

The computer workshop in Sicily opened in the summer of 1981. This year Club Med is offering similar opportunities in 11 villages from New Caledonia in the Pacific to the Bahamas in the Caribbean. The target for 1985 is 45 computer villages.

For the pilot experiment at Kamarina 12,000 GMs sampled the workshop's facilities and more than 2,500 of them completed an apprenticeship in Basic, the simplest of computer languages. The Gentils Organisateurs (GOs), or the village staff, were astonished. They expected that most of the workshop's visitors would be children looking for a new variety of Space Invaders. But adults made up the majority of computer fans.

Club Med's computers are used at the poolside in Kamarina holiday village in Sicily.

Laboriously composing his own program on a computer, a Paris doctor explained: "I would never have had time to do this at home. But when I get back to France I'm getting a computer of my own to help manage my practice."

A lonely wife pleaded with the GO in charge of the workshop: "Please tell my husband you are full up tomorrow. I just cannot prise him away from the computers. We have hardly spent a moment together since we began our holiday."

As the GMs stepped off the charter planes which flew them to Sicily from France, they were handed a brochure with the title "From the circus to the computer". The document explained that, throughout their stay in the village, they would discover a vast range of roles for its computers, including a reservation system for shows under Kamarina's "big top".

Holidaymakers use computer terminals to clock the times of yacht races on the beach.

The GMs themselves put the computers to work on a variety of tasks, such as calculating and displaying the results of yacht races and tennis tournaments on the terminal screens. Soon the terminals were to be seen everywhere: beside the swimming pool, on the beach, clocking the times of yachtsmen, registering bets on song contests or converting French francs into Italian lire.

In the initial experiment at Kamarina only French firms took part. CII-Honeywell Bull provided eight Micral 8030 and Questar M microcomputers. Four of these were connected to Thomson-CSF videodisc scanners Matra, Télic, Thomson and Radiotechnique lent seven terminals for access to Teletel.

Establishing a reliable link between a remote part of southern Sicily and the computer host centres in a Paris suburb was a remarkable feat. The quality of the telephone lines from Kamarina was not up to the standard required.

French Telecom asked the Italians for a 9,600 baud line but obtained only 4,800 baud, which meant slower response time on the terminals. Cable and microwave links were set up between Kamarina and Catania and thence on to Rome, where international lines took over for the connection with Paris.

From the French capital Transpac, France's data packet switching network, provided the link with the host centres that act as telephone exchanges for the data banks. The principal centre was at Velizy where Teletel is now being tested in 2,300 homes.

The success of the Kamarina test aroused the interest of the foreign firms. Atari, Philips, Sharp and Tektronix now provide equipment for other computer villages. Conscious of the value of Club Med as a shop window for their wares, they queued up with offers to join in the new ventures.

Atari 800s will not be confined to the computer workshop or classrooms, but scattered throughout the village, enabling everyone to familiarise himself with the working of a simple microcomputer system

Explaining the increasing emphasis given to video games by Club Med, Pierre Schemla, the organisation's computer workshop chief, says: "There is no danger of any of our villages becoming a computerised Las Vegas. Our GOs' job is to help the GMs understand what goes on inside the computers and to invent new uses for them."

The club's most ambitious venture is being conducted at Vittel, a spa in eastern France, by Tektronix and the Centre Pompidou's Workshop for Advanced Technical Research (ARTA). Using a light pen, holidaymakers can draw on the terminal screens. Photographs and other designs can be fed into the computer's memory.

Each village has developed its own uses for microcomputers. Local Club Med traffic managers have discovered they can simplify the transport of holidaymaking by feeding passenger lists, destinations and charter flight schedules into the machines.

TRIGANO . . . Convinced that curiosity would be whetted.

Schmela says: "If Club Med headquarters in Paris had told our people in the field what to do, they would have taken no notice. Now they are devising their own programs."

Club Med says it owes much to Atari, the American firm that specialises in video games. Atari 400 and 800 games computers are being installed at a dozen villages this summer. A Caribbean village is being equipped with 52 Atari 800s.

These will not be confined to the computer workshop or classrooms, but scattered throughout the village, enabling everyone to familiarise himself with the working of a simple microcomputer system.

Even Club Med's coloured bead necklaces, which replace cash for buying drinks at village bars, are endangered by the advent of the computer. Trigano's experts are now studing their replacement by the "smart card", a strip of plastic resembling a credit card. A microprocessor memory enables it to be used to pay bills, while a secret code, known only to the lawful owner, makes it worthless in the hands of a thief.

This summer, with French holidaymakers' foreign currency allowance drastically limited by the Socialist government's austerity campaign, Finance Minister Jacques Delors could have a new device to ensure that nobody spends more than his due.

Which operating system is best? Geoff Stapleton votes for CP/M, and, next page, Carl Phillips elects Microsoft

Don't let IBM dominate all the personal issues

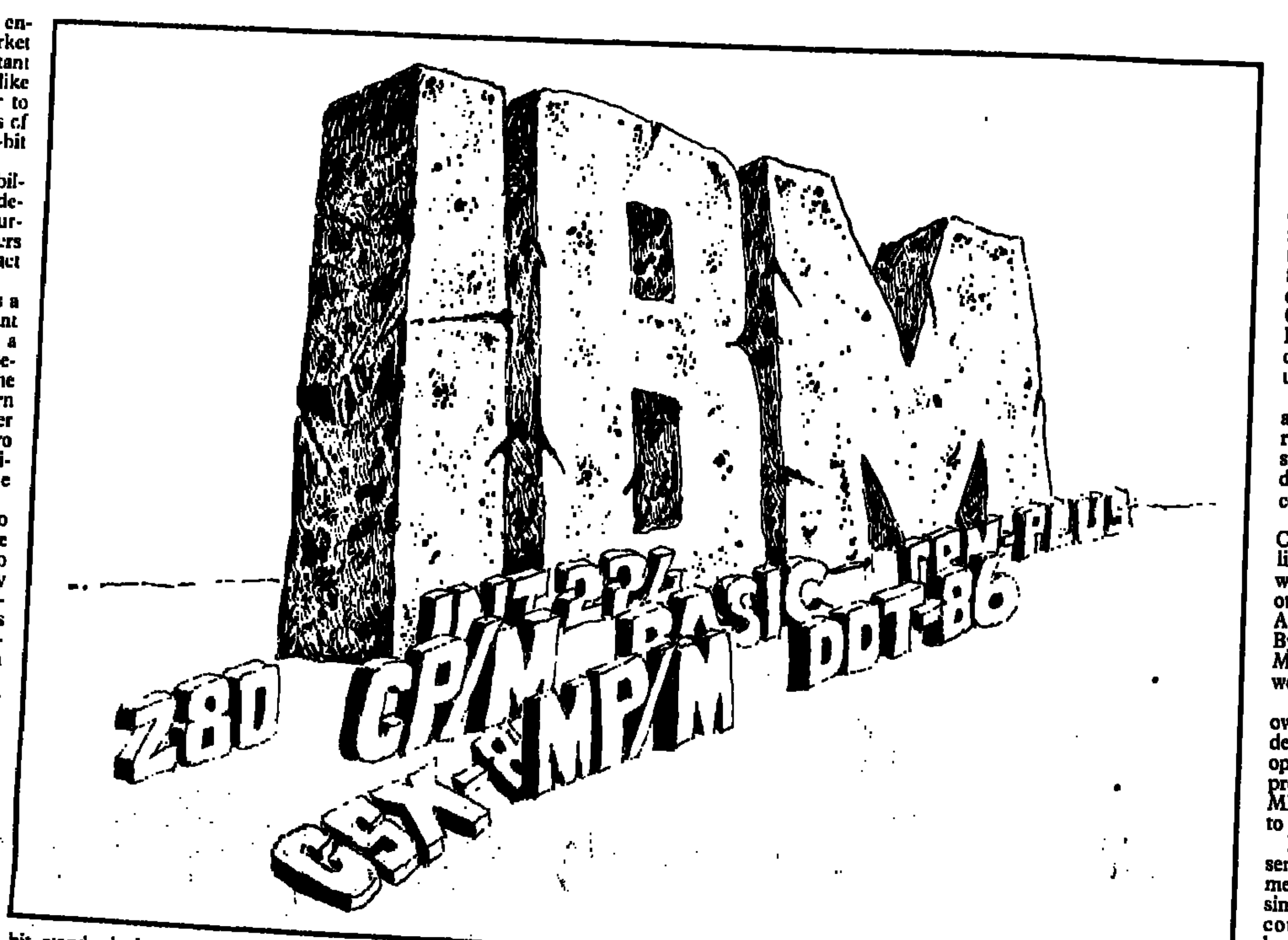
FURORE surrounding IBM's entry into the microcomputer market may have clouded some important issues. In the fever to "be like IBM" some companies appear to have lost sight of the objectives of having a truly standard 16-bit operating system.

A standard will offer compatibility and portability to software developers, computer manufacturers, end-users and corporate users alike: each of whom will extract individual benefits from it.

The software developer needs a standard to reduce development effort in writing products for a range of microprocessors, thus reducing the cost and widening the potential market. This in turn helps the hardware manufacturer because, particularly in the micro area, a broad availability of applications software sells the hardware.

End-users want a standard to guarantee a good supply and, more important, a choice of packages to keep pricing competitive. They also need a well-established operating system so that their progress is not impeded by bugs, which invariably slip through the net with unproven software products.

Corporate users are looking for even more stringency in a standard, because their use is more complex. Machine to machine compatibility for linking micros within a network, or individually to a mainframe, is essential for a corporate user and opens up the area of protocol emulation for the systems software.



Mainframe installations usually set a high internal standard for application software, and any micro products introduced should be able to match it.

In none of these specific cases is compatibility with the IBM Personal Computer a critical point. Software and hardware devices can be used to emulate almost any type of protocol to link micros with IBM or other manufacturers' mainframes: this is not the exclusive preserve of the IBM PC.

It is, anyway, a myth that any operating system could offer total compatibility with the IBM PC.

To provide 100% compatibility the system would have to run all the IBM PC software and support all hardware options, which would mean faithfully reproducing the functionality of all proprietary circuits and the IBM ROM.

The ROM, however, is copyright so that ROM code has to be implemented in a different manner to produce the same result, so that there is always a chance that programs referring directly to the ROM will not run.

There is also the possibility of a legal wrangle with IBM, which has shown itself ready and eager to fight over copyright infringements.

PC-DOS is, in any case, an IBM-owned operating system and IBM has the exclusive right to change or enhance it as required, without reference to other versions of the basic software.

Many programs bypass the operating system to optimise the disc or screen interface by communicating directly with the hardware, and other systems would be unable to imitate the results. Visicalc is an example of a program which is like that.

Taking a step back from the overall micro market (and remembering the true reasons for adopting a standard operating system), it is obvious that the CP/M family of operating systems goes far towards fulfilling all the conditions.

Firmly establish[illegible] is the eight-bit standard, it now has over a million users and over 4,000 applications: enough to make the 16-bit marketplace considerably more secure, since compatibility is guaranteed throughout the family.

But how does the CP/M family set about satisfying the needs of users throughout the spectrum, without diluting the strength of the underlying, amply-proven CP/M product?

Digital Research is a firm believer in choice and in giving users the freedom to choose their own direction, rather than pushing them towards a particular environment.

This is illustrated by the fact that the company offers three levels of operating system for 16-bit machines: CP/M-86, Concurrent CP/M-86 and MP/M, and the ability to migrate between them.

CP/M-68K for machines based on the Motorola 68000 chip is also now available, and work on the CP/NET network operating system is well advanced.

A further example is the wide range of languages offered under each system and directly available from Digital Research. These include Basic, Pascal, CIS and Level II Cobol, PL/I C and, most recently, Logo. Powerful utilities are also supplied with the operating system to speed systems development and increase users' flexibility.

Eight utilities are supplied with the CP/M-86 single-user, single-tasking operating system, including a text editor which allows string, context, line number and relative position searches; and a fast 8086 assembler using Intel standard mnemonics. Also for system developers, there is a dynamic debugging tool for interactive testing and error correction.

A further set of cross development tools is provided to assist OEMs in bringing up CP/M-86 on a specific hardware device. These reside on a CP/M-based 8-bit Z80, 8080 or 8085 system and may be used to develop a version of CP/M-86 for the target machine, dramatically cutting the OEMs' costs.

The operating system itself is designed for ease of transportability, with all hardware-dependent code located in the BIOS, or Basic Input/Output System, which resides at the top of the memory space. A system implementor has only to modify subroutines held in the BIOS to customise CP/M-86 for almost any 8086 or 8088 operating environment, where it occupies only 12 Kbytes of memory.

Despite being so compact, CP/M-86 is very powerful and can support up to 16 logical disc drives, each containing up to eight Mbytes, for a maximum of 128 Mbytes of online storage. It can handle up to one Mbyte of RAM and an individual file may take up to 32 Mbytes, with space being dynamically allocated and released.

End-users want a standard to guarantee a good supply and, more important, a choice of packages to keep pricing competitive'

Non-contiguous memory locations are handled through a user-defined memory configuration table and CP/M-86 allows multiple programs to reside in memory simultaneously, giving facilities for background tasks. Dependence on absolute addresses, however, has been minimised because 8086 programs are simple to re-locate.

Intel has reserved the instruction INT 224 specifically for CP/M-86 and its applications programs, to provide a reserved software interrupt for system entry.

In January this year, a new version of CP/M, CP/M Plus, was launched to add extra features known as "Plus functionality" to the eight-bit system. This is currently also being implemented into the 16-bit systems.

Plus functionality increases the speed of disc access by about five times, through introducing hashed file directories, least recently used sector buffering, and multi-sector I/0. Automatic disc log in has also been introduced, with CP/M monitoring media changes.

This means that the user need not inform the operating system of a disc change using the RESET command: CP/M will detect a media change and log in the new device, performing no further I/0 for files which are already open.

Concurrent CP/M, the single-user, multi-tasking system, already contains Plus functionality and uses it to great advantage to increase hardware efficiency, and make use of the time that single-user systems inevitably lose to I/0-bound processes.

Like OP/M-86, Concurrent CP/M-86 manages up to one Mbyte of memory, and up to 16 logical disc drives, but each drive may have up to 512 Mbytes of storage.

File integrity is controlled by record and file locking functions within the operating system, inside an overall password-protected security system for user files and directories. Files are also stamped with data and time details, for cross-checking data integrity.

Memory may be partitioned at the time of system generation into segments of between one Kbyte and one Mbyte, and processes are allowed to share re-entrant code. This reduces disc load time and memory requirements when running several copies of the same program from different virtual consoles.

A physical console can be logically mapped on to any virtual console by use of a single function key, directing keyboard input to the task owning the virtual console and displaying the screen output.

Concurrent CP/M-86 maintains several virtual consoles simultaneously: one of these is always mapped to the physical console while the rest remain in the background. The CP/M-86 Dispatcher requires only from 400-600 microseconds to switch the currently executing task for another, giving greater system throughput.

So CP/M-86 and Concurrent CP/M-86 cover all the needs of the software developer, end-user and system implementor in a single-user environment. What then of multi-user installations?

Digital Research believes in accurately matching operating system capabilities to microcomputer resources for optimising efficient operation. A system such as Unix from Bell Laboratories was initially developed to run on DEC PDP-11 minis as a timesharing program development environment, and as such as a top-heavy piece of software for micros.

Inix does have an excellent range of program development aids, but these are beyond the scope of most end-users and to provide a subset would defeat the objective of the exercise. Instead, Digital Research is helping users to take advantage of the benefits offered by all of the options.

By providing a C compiler and runtime library for each of its 16-bit operating systems, Digital Research has attempted to pave the way for applications developed under Unix to run on the CP/M family.

These programs can be run under the MP/M-86 operating system, which is fully compatible with CP/M, MP/M II and CP/M-86 to provide a smooth migration and upgrade path.

MP/M-86 is a real time, multi-user, multi-tasking operating system suitable for any machine with an 8086 or 8088 processor, and incorporating the advanced features of Digital's other 16-bit systems. It also has a far more effective security system than the raw version of Unix, with an extended file system of record and file locking, dictated by Open File commands through a Basic Disc Operating System (BDOS) call. Passwords, which may be encrypted, provide protection for user files and directories.

Disc management capabilities are the same as those for Concurrent CP/M-86, but MP/M-86 supports up to 254 character I/0 devices, such as printers and consoles.

Commands are a superset of CP/M-86 commands, and controls a library of 24 utilities, many of which will be familiar to users of other CP/M systems, such as PIP, ASM-86, DDT-86 and SUBMIT. By far the greatest strength of MP/M-86, however, lies in its networking potential.

CP/NET, Digital Research's own network, is essentially a Resident System Process (RSP) to the operating system and interface procedures may be included in an MP/M system at generation time, to be handled by the supervisor.

Digital Research has included a series of protocol "handshaking" methods, including one for a simple RS232 interface, to encourage compatibility among hardware vendors. CP/NET is already working on eight-bit systems, but development of CP/NET-86 is still in progress.

Until quite recently, operating systems have ignored support of the important and emerging graphics peripheral devices, which threatened to seriously restrict a level of device independence offered by a standard operating system to the application developer. Digital Research has taken the initiative and has designed graphics support consistent with the ANSI and ISO graphics standards.

Graphics products interface at three different levels: GSS-GRAPH, GSS-DRAW and GSS-4010 at application; GSS-PLOT and GSS-KERNEL at programmer; and GSX-86 at operating system level. GSX-86 is essential to drive output devices, but the other products offer alternative facilities to users of differing technical competence.

End-users can quickly generate colour charts or graphs with GSS-Graph or GSS-DRAW, while system builders can create graphics applications using workstation controls and two dimensional primitives from GSS-KERNEL and GSS-PLOT routines.

It is obvious from examining the wealth and type of facilities offered by the CP/M family of operating systems that Digital Research is closely in tune with user needs. The company is continually developing and expanding the capabilities of its CP/M operating systems to match the growing capabilities of microcomputer hardware.

This relationship has not been formed overnight, or on the strength of one successful product: it has grown and evolved alongside the developing micro marketplace.

Surely in the search for a standard 16-bit operating system, stability and mutual trust are factors which far outweigh considerations like trying to follow IBM?

Geoff Stapleton is a freelance software consultant.

Why 16-bits aid puzzled users

ANYBODY developing applications for eight-bit microcomputers has traditionally had little cause to rejoice in the operating systems available. They have often hindered, rather than promoted, software development, and in stark contrast, minicomputer programmers have had access to a wealth of software development aids, tools and compilers.

Bringing the two together has been made possible with the new generation of 16-bit hardware. Fast Winchester discs, core memory up to one Mbyte, faster processor speeds and more powerful internal architectures are now common on microcomputers. Even memory management (both hardware and software) is now beginning to make an appearance.

With the advent of the more powerful 16-bit machines came the opportunity to break out of the old mould and offer the software developer a flexible development environment, rich in tools and utilities.

The 16-bit applications developer now has a choice of operating systems with his eyes keenly trained for the emergence of a universal 16-bit standard. However, the developer must beware that the standard under which he develops will also allow his programs to explore the full power of the hardware, and ease the development task.

One of the most important considerations in creating applications is the size of the market to which those applications will be suited. The applications developer will want to see maximum returns for his investment in development: his programs should be available to as many microcomputer users as possible.

Two factors will enhance the developer's market — the first is the operating system environment.

Resources are frequently stretched during the development phase of an application, and to have to split development to cater for two or more "standard" operating systems is a further unnecessary overhead. Ideally, the application would be developed for one operating system — one used on a large proportion of microcomputers.

The second consideration is the flexibility of applications, their portability across different machines and the ease with which they will cater for different devices supported on each machine.

Memories of patching the CP/M-80 BIOS each time a new device is added to a microcomputer must come flooding back to eight-bit developers when the subject of flexibility is mentioned. Installing new devices has not been the most simple of activities in the past.

Flexibility is also required when moving an application from one machine to another — screen handling, cursor codes and I/O are likely to vary from one machine to another, even under the same OS.

Each application should be insulated as much as possible from the specific features of the hardware it runs on, while being able to take full advantage of the unique features available on some machines.

Having considered the commercial aspects of applications development there remains the development environment itself. It should promote applications development with ~~time-saving~~ utilities and features such as efficient disc use and file organisation, simplified disc I/O, powerful assemblers, linkers, loaders and compilers.

Other desirable features such as powerful I/O commands with easy chaining of commands, are emerging on the latest operating systems, at the command level. Batch files on these more recent operating systems include tests, conditional jumps and branches and are almost command level programming languages in themselves.

A number of lessons can be drawn from minicomputer operating systems, and flexibility is one of the more obvious. In particular, device independent I/O and installable device drivers.

MS-DOS 2.0, the latest version of Microsoft's 16-bit operating system incorporates both these features, with a great deal of similarity to the Unix operating system — probably the most widely used minicomputer operating system. MS-DOS 2.0 represents one of the most advanced of the new generation of 16-bit operating systems with all of the above features.

The first difference the user will notice with MS-DOS 2.0 is the difference in the BIOS. Instead of the jump table found on previous microcomputer operating systems, MS-DOS 2.0 has a table of device drivers for each device configured with that system. Re-engineering of this BIOS when new devices are added is greatly simplified: the OS simply reads in driver for the new device and incorporates it into the list of devices at boot time.

Programmers familiar with minicomputer systems have regarded the microcomputer development environment as cumbersome and impractical

Skeleton device drivers are supplied by Microsoft for customisation, and the applications program need only substitute a different logical device name to change the output medium.

The burden of supporting the standard protocols falls on the device drivers, so that the code required to perform graphics functions and other special I/O need be written only once, not rewritten for each application program.

Each device has a logical name associated with it and device drivers are loaded when the system is booted. The system integrator can easily incorporate new and nonstandard devices into the system, or can deliver different configurations to different customers without having to maintain multiple operating systems.

This dynamic loading also allows an unlimited number of devices to be supported on the system simultaneously.

Programs then communicate with the different devices in a uniform manner. Program I/O is treated as communication from one file to another — devices are treated as files. Writing to a device, such as the console, is performed through an I/O stream. This is changed simply by changing the logical device name.

With MS-DOS 2.0, Microsoft has addressed itself to the problem of supporting multiple terminal environments. The ANSI standard terminal control codes have been defined as the MS-DOS standard.

The operating system intercepts the ANSI sequences and converts between the terminal's actual cursor movement character codes and the ANSI sequences. Such an approach does not restrict the kind of terminals that can be used — the benefits to the portability of applications are obvious.

MS-DOS 2.0 also supports AT&T's presentation level text and graphics protocol. The presentation level protocol is a resolution-independent method of describing in a serial byte stream characters and graphics objects. This means that a graphics image may be stored on disc just as if it had been written to the screen.

One factor, possibly more than any other, prevented true portability of applications in the eight-bit world. Although most machines used 5.25 inch diskettes, there was no disc formatting standard and discs could not be transferred between different machines running under the same operating system. Microsoft has established interchangeable diskette standards, which have been adopted by almost all manufacturers that offer MS-DOS on their machines.

Almost without exception, programmers familiar with minicomputer operating systems have regarded the microcomputer development environment as cumbersome and impractical. They are used to having tools at their fingertips during development, to compare two compiled files, search for strings within files, for example, and to be able to send a number of programs to a compiler without having to wait for each to complete before sending the next and without waiting inordinate amounts of time for each compilation.

At the command level, MS-DOS 2.0 has opened up a whole new set of capabilities for the developer. Commands can now be linked together in a number of ways, and their outputs passed through a number of filters.

Pipes and I/O redirection are just one way of linking commands. Pipes allow the output of one command to be used as the input to another or to pass the output through a filter. Take the following example:

```
dir | sort
```

This will pass the directory listing through a sorting filter, giving a sorted output on the screen. The output of any command can be redirected to a new device or a file using the ">" symbol. Thus,

```
dir | sort > sortedlist
```

will output a sorted directory lising to a file called sortedlist. If sortedlist does not already exist, MS-DOS 2.0 will create the file. The command:

```
dir | sort >> sortedlist
```

will again take a sorted directory listing, but this time append the output to the end of the file sortedlist. The command:

```
type sortedlist
```

will print the contents of sortedlist on the screen. In this case, it will consist of two sorted listings of the directory contents.

Sort can be used with a number of switches, to sort in reverse order, sort by files size or by any field in the output. Other filters include a data encryption fileter (CIFER), FIND and MORE which will send output to the screen 24 lines at a time.

Any of these commands can be used within a batch file. Batch files consist of a series of OS commands which are executed consecutively. Whereas in previous microcomputer operating systems, batch files consisted of nothing more than this, though MS-DOS 2.0 allows the batch file to become a small program, with command extensions such as "echo", "for", "goto", "shift" and "if", allowing the conditional execution of batch commands.

One of the biggest headaches to the developers of large programs is systems administration — how to keep track of a number of programs, often up to 200, on a system at one time. The logical drive method employed in earlier microcomputer operating systems, provides only a limited framework for file organisation. A hierarchical file structure, as employed in Unix, has been included in MS-DOS 2.0.

The benefits of this structure are that files can be grouped together in any of a number of directories, and directories can even have sub-directories. The number of "layers" or sub-directories is unlimited, and easy access to all files is maintained by the use of pathnames.

For example, a listing of a certain graphics assembler file "grapl" held in a directory called "asmb", which is in turn held in a directory of graphics routines called "picts", would be carried out as follows:

```
type /picts/asmb/grap1
```

Moving between directories is possible with the "cd" command. Thus:

```
cd /picts/asmb
```

will take the user into the "asmb" directory.

Thereafter, the full pathname to the "grapl" file need not be specified, as it is resident in the current directory. The command:

```
type grap 1
```

would now produce a file listing.

The features included in MS-DOS have set it apart from the 16-bit operating systems derived from the eight-bit world. The world has moved on from those days and future operating systems will continue to evolve, incorporating more and more powerful features, both for the applications developer and the end-user.

Carl Phillips is a Microsoft technical support manager.

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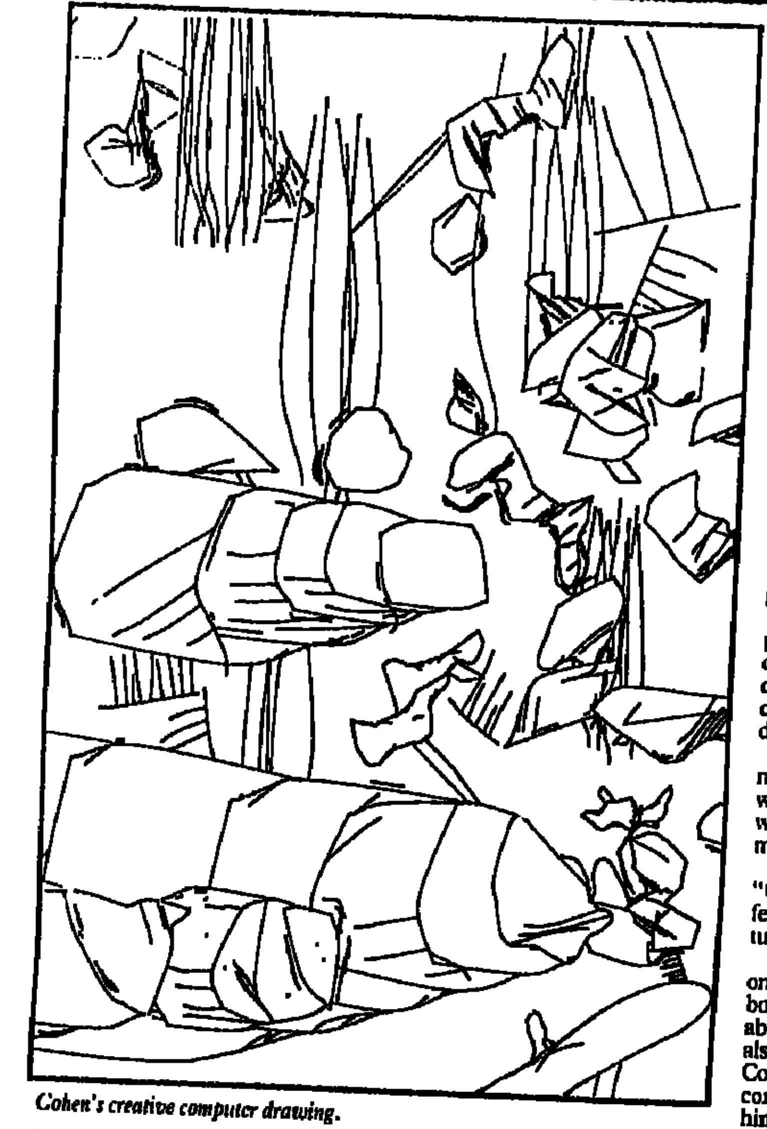


Cohen's creative computer drawing.

'Expert' on show at the Tate

SOME might accuse artist Harold Cohen of plagiarism. Certainly few artists are more prolific, but the drawings that he was signing last week at the opening of his exhibition at London's Tate Gallery were generated by a computer.

Cohen, 55, began as an abstract painter. He started working with computers in 1968 and has produced an expert system which drives a big plotter to generate drawings at the rate of 12 an hour.

Cohen says that his system is much like other expert systems, with a knowledge base containing what he considers are the fundamentals of drawing.

But there is one big difference. "Other expert systems draw inferences, while mine draws pictures," he explains.

Signed copies of Cohen's work on show at the Tate Gallery can be bought for £10. They measure about two feet by one, but there is also a huge mural tapestry, which Cohen enlarged from one of his computer drawings, and coloured himself, if you want something bigger.

On the tapestry are what looks like three huddled figures. "Those are the three wicked witches of Macbeth," he says. "And there are the Virgin Mary and Joseph."

How is a computer able to depict such figures?

"It is just a matter of intrepretation," says Cohen. "When you look at a painting, you think you see what the artist is getting at. Really you are seeing what you are getting at."

Cohen calls his program Aaron, perhaps because he can see the biblical Aaron in one of his computer drawings. The intelligent knowledge base contains basic requirements drilled into art students like perspective, and the fact that you have to draw a shape smaller to make it look further away than another.

Aaron learns from its drawings by remembering shapes previously generated, and the program attempts to extract some pattern from them.

In this way, Cohen says, the program can experiment just like a human artist, and there is no limit to what weird and wonderful shapes it can produce. The machine soon began to produce one shape inside another as a continuous action, even though it had not been programmed so to do.

Aaron is still an infant, Cohen tells me. The eventual aim is to make the program self-modifying.

Aaron took nine months to write in the C language, with Cohen himself doing most of the programming. Cohen does not think Aaron will make artists redundant. "It makes me feel very important," he says.

Cohen's is not the only exhibition where the impact of computers can now be seen on the art world. At the Darwin Building, next to the Albert Hall, there is a computer driving a weaving machine, part of the Royal College of Art's degree show.

One of the college's students, Rosemary Moore, designed a program, with the help of Courtaulds, to enable complex textile designs to be printed automatically.

The idea is that complicated designs can be printed more easily and more quickly by programming the machine to control the printing process.

Intricate designs previously only usable for "one-off" prints can now be produced in mass. The implication of this is a bigger market for more sophisticated designs, and therefore greater freedom of action for designers.

Cohen (centre) with his computer at work.

Blind lawyers need no longer rely on others to read out precedents.

Terminal lets blind use data service

JOBS that involve operation of a video terminal are more open than most for blind people. The work can be done sitting down, and now that there are plenty of Braille terminals and printers, it is not surprising that the blind are well represented in the computer industry.

But there is still the problem that Braille terminals cannot yet be linked up to many standard online enquiry systems. Such links are particularly useful for the blind, since printed information is rarely available in Braille.

But blind lawyers at the Ministry of Agriculture are now using a Braille terminal to access legal information on Eurolex, the online legal information service.

The service uses the Versa-Braille terminal made by Telesensory. This terminal recently came out top in a comprehensive survey of Braille terminals carried out at Bradford University, where there are several blind students.

The terminal accesses Eurolex just like a standard VDU, except that only one line of information comes up at a time. The enquiry is fed in by touching the appropriate Braille input keys, and the reply is read by touching a Braille output pad just above.

Eurolex offers a library of European case law for legal research, and gives references to test cases for lawyers to use as supporting evidence. Unlike some other legal services, it does not require dedicated equipment to be purchased, and any word processor can be linked up.

Itec training has the sound of success

COMPANIES often say that the number of people they take on depends on how good the applicants are.

Does it mean jobs can be created by giving people better training? This is certainly the hope of about 2,000 youngsters who will this year be trained at one of the Information Technology Centres (Itec) set up by the last government.

The idea is to give school-leavers a year's training in programming, microelectronics, and office skills, rather than dump them on the dole queue.

So far 100 Itec centres have been opened, and 100 more will come on air this year. Each one will take about 30 trainees.

Early soundings suggest that the centres could be successful, perhaps eventually taking several thousand youngsters out of unemployment each year. Three-quarters of trainees at the first Itec – opened in 1981 at Notting Hill in London – found work afterwards.

The aim is to avoid rigid training schedules. Although training is supposed to last for a year, if a student finds a job sooner, another student can quickly take his place.

The centres are also flexible about funding. The Manpower Services Commission is responsible for the overall scheme, but each centre will operate independently.

Some will run as independent companies, some will be funded by the Department of Industry, while others will be funded by the local authority, local companies, or a combination.

Berkshire's first Itec, officially opened last month, is funded jointly by the county council and Digital Equipment.

There are close links with Reading Chamber of Commerce. "This is to alert local firms that there is an Itec in Reading, and arrange work experience placements," says Barry Deller, who runs the Reading Itec.

At most Itecs, Deller says, 13 weeks of the year will be spent on work experience at companies allied to the scheme. The last half of the course will focus on aptitudes shown by trainees.

There have so far been four times as many applicants as places available, so there is an interview, and IQ test as part of the process to sift out the best.

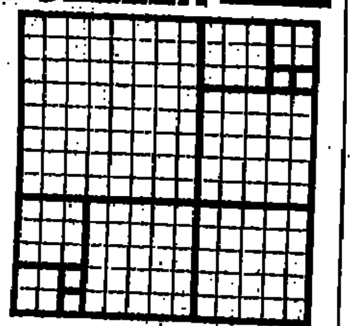
The Tameside Itec in Cheshire has been open three months, and is jointly funded by the MSC, the DoI and Tameside local authority.

"Already quite a few trainees have been approached by local companies," says director Paul Hartland.

The Tameside centre also gives youngsters training in interview technique, word processing and "the modern office".

Workplace is compiled by Philip Hunter

PUZZLER



THIS diagram shows how a 13x13 square grid can be divided up into 12 smaller squares, by means of dissection-cuts which follow the grid lines.

Your task is to find a different dissection, once again following the grid lines, in which only 11 squares are used.

See page 79 for solution.

Andy is riding high on Tops

FED up with despatch riding, Andy Jackson applied for a Tops course in ICL Cobol. As that course was full he took another Tops course in RPG II programming for the IBM System 34 mini.

Eight months after graduating, he is earning £7,250 as analyst programmer for the company he worked for as part of his Tops course.

Jackson speaks highly of the course, and would recommend it to anyone wanting to switch from the dole queue to programming. Six of the nine on his course were given jobs immediately afterwards by the companies they worked for on secondment as part of the curriculum.

The only snag is that just 40% of applicants for the RPG II course are accepted. This is partly because London-based Datasolve, which runs the course, insists on some knowledge of how a business runs. And this rules out a lot of young hopefuls.

Carol Gibbon, of Datasolve, says that the Cobol courses are slightly easier to get into, but the job prospects are not quite so good, with an 80% placement rate.

Jackson thinks he has hit the jackpot with programming.

Already he is number two programmer in a team of three for Bros, which specialises in distributing bulk supplies to several large companies.

Most of Jackson's work involves writing RPG II programs to handle order processing for the company and some of its clients. The software itself is easy, says Jackson. The problems come when a client wants changes to be made when it sees the final product.

To justify his title of analyst, Jackson maintains a constant dialogue with clients while developing a system.

The company runs British Airways' £55 a year Executive Club.

The system stores data on almost 40,000 club members, and has recently run into storage problems, since the System 34 until recently only supported floppy diskettes. These slowed the system down badly.

But the problem has now been solved by a new tape drive adapted for the System 34 by Thorn EMI Datatech.

Cullinet tries to avoid a takeover

Success could be numbering the days of independence for software companies, as George Black writes

MORRIS . . . Slow rate of turnover is an indication staff would not want to work for new bosses.

SUCCESSFUL independent software companies are ripe for takeover by technology-hungry multinationals. But a 59% jump in sales and a hefty 52% hike in profits in the last year have given Cullinet plenty of breathing space.

"Anyone who wanted to buy us would probably have to find three quarters of a billion dollars, and then they would find that a lot of the staff would leave," says Vic Morris, managing director of Cullinet UK.

What Cullinet has to offer is brains, Morris says, and if the brains leave, an acquisition on such a scale is not exactly a bargain.

It has been a year of crisis for the company, if crisis is read as being a time of dramatic change. Symptoms are a new name and new British headquarters

A similar argument was put by senior management at Mathematics a little over a year ago, but a deal is expected to go through next month, which would make the US software company part of the giant Martin Marietta Corp.

Morris points to the slow rate of staff turnover as an indication that the staff would not want to work for new bosses. And the rewards are there to be had – Cullinet president Bob Goldman began as a programmer.

Of course, controls have become more strict as the firm has grown, but Cullinet management has striven to avoid hierarchy by splitting the organisation into projects involving not more than 15 people.

In the financial year ending April 30, revenues reached $78.5 million compared with $49 million the previous year. Profits soared to $11.6 million against $7.6 million the year before.

Morris says Cullinet has not been able to "hold it down" to the projected growth in sales of 50%. The previous year's 68% jump to $49 million was felt to be a target it should not aim to emulate.

It has been a year of crisis for the Massachusetts-based company, if crisis is read as being a time of dramatic change. The symptoms of the transformation are a new name and a new British headquarters.

John Cullinane himself decided to give up the use of his own name and put the emphasis on networking; the "database systems" tag was dropped, as he thought it no longer reflected the company's range of activities.

Cullinet's UK team of 35 has just moved out of its central London base in Southampton Row to a brand-new red brick building in Stanmore. The removal was the end of an era for the company. The last days in Southampton Row had something of the Dunkirk spirit for the staff, trying to do the best they could in a difficult environment.

The Stanmore offices will enable them all to meet in one place for the first time for some while and to expand to a payroll of 50 by the end of this year. Below them is a Safeway's supermarket – but the match is felt to be quite suitable, as Safeway's is a Cullinet software user.

The premises are what jargon calls "ergonomic" and an example of "top-down design" – but staff are just saying they are "nice and comfortable".

One thing they overlooked at first – understandably – was a paging device. No one ever thought of the problem of too much space. More than most high technology businesses, Cullinet is having to cope with the difficulties of growth, the speed of which is determined more by customer demand than by management policy.

The choice of Stanmore was strongly influenced by customers. IBM sites are not strung out along the Thames Valley, where so many computer firms are making their homes, argues Morris. Crucial factors for an IBM software house are the M1 and the coming M25, not the M4 and Heathrow.

When Cullinane first decided to spread itself overseas, Morris became "our man in England". The products were sold through BP's subsidiary, Scicon, which Morris joined from British Leyland in 1976.

The firm began in 1968 selling the EDP auditor when reportwriters were a new concept and were received very suspiciously in the data processing world. Then it acquired the rights to the IDMS database system, which it rewrote from Honeywell to IBM hardware for the American tyre manufacturer B F Goodrich.

By 1979 Cullinane was convinced that working through an agency was not the long-term answer and set up his own British offshoot. Research and development is still centred in Boston.

The British operation consists mainly of a sales team of eight and a technical support operation of 20, with the emphasis on preventive maintenance rather than "firefighting".

There are Cullinet offices in Paris and Brussels, where work is in progress on a Siemens version of IDMS. Representation in Germany is through ADV Orga.

Another sign of the changing self-image is the recent advertising campaign. Many computer firms have been increasing their spending on publicity, but most of these are hardware firms and much of the output fairly predictable. Cullinet spent $100,000 in May and June in the UK alone and is preaching software as a gospel.

The coming revolution will bring data processing departments closer to their users, make them less hostile to users' having their own micros and make them spend more time on analysis

Software's importance is recognised in the industry—indeed has almost become a cliche – says Morris, but the general public still has to be convinced that it's not just a matter of going out and buying a box without knowing what will make it work.

Morris does not rule out further takeovers, but says these would only happen if the company found it could not satisfy customers with present resources.

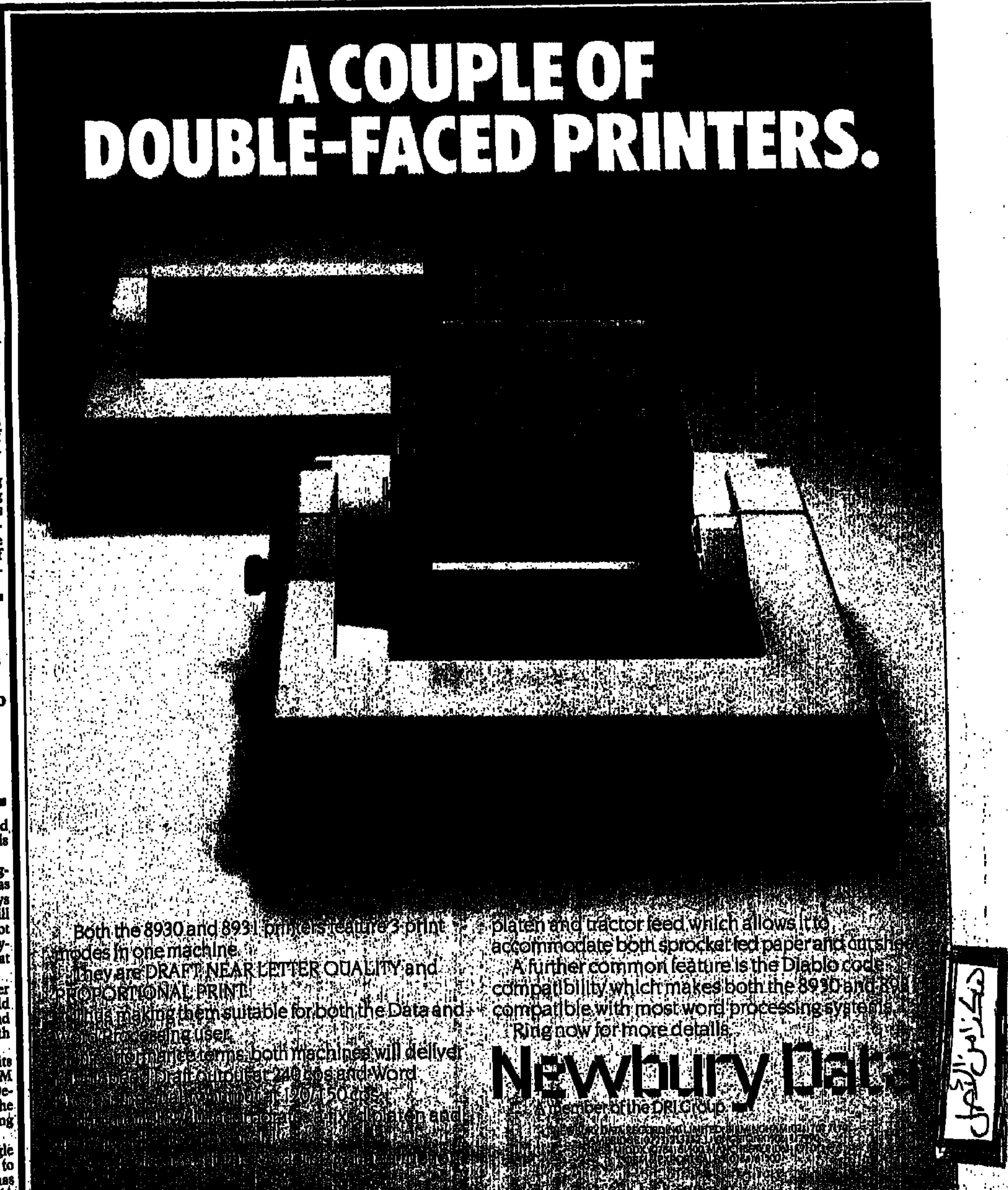
Cullinet is on target to release its IDMS/R package, linking IBM mainframes to micros, in December. Morris sees it as one of the major milestones in computing history.

"The old theory that a single corporate database accessible to everyone could not be done has been proved wrong," he says. "A large part of the problem was just that people didn't want it to be done. They didn't want to co-operate in this great exchange of information."

The coming revolution will bring data processing departments closer to their users, make them less hostile to users' having their own micros and make them spend more time on analysis, less on coding, he foresees.

And the next era is likely to bring a new intensity of competition with the other principals of the software world, such as MSA, Cincom, ADR, Informatics and McCormack and Dodge.

Morris insists they now have the tools at their disposal to be ready for the challenge.



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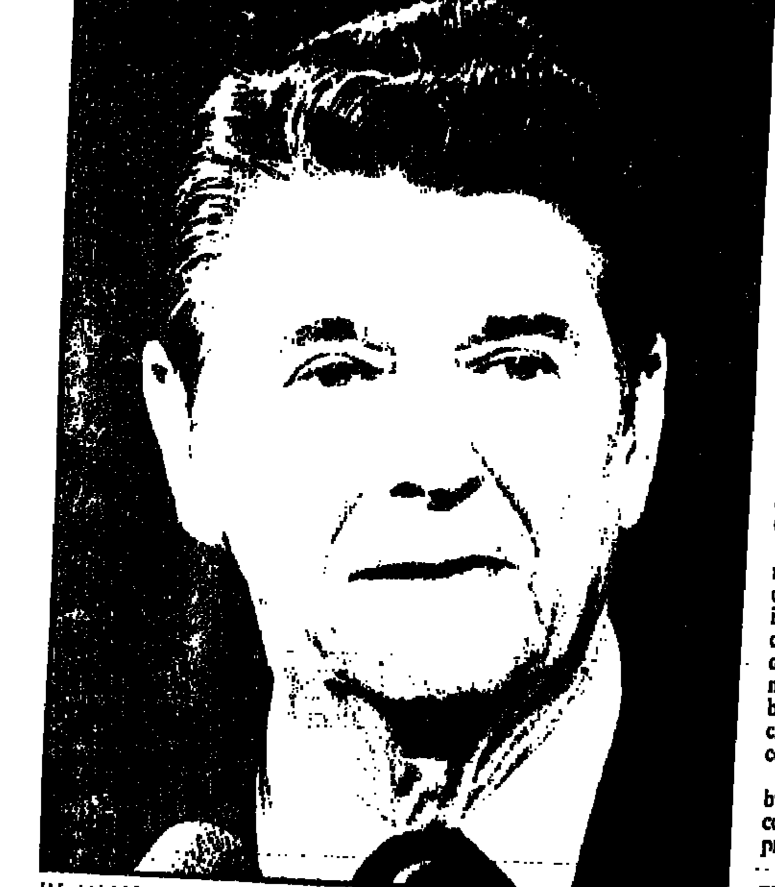
REAGAN . . . *Invoked sanctions against UK-based companies.*

Why computer firms are political footballs

Kevin Cahill looks at how European companies are caught between the US and USSR

A LARGE number of high technology companies do extensive and profitable business with the Soviet bloc and eastern Europe. They include such names as ICL, Quest, CDC and IBM.

Digital Equipment Corp, whose machines have been at the centre of recent "spy" stories about illegal Soviet acquisition of American technology, has an official distributor in Yugoslavia, which is not quite inside the Soviet bloc, but which maintains extensive and close trading links with most of the countries behind the Iron Curtain.

A spokesman for ICL described business with Russia, where the company maintains an office, as profitable and rewarding.

"The Soviets are good business partners. They pay on time and once the bureaucratic procedures have been observed, business is profitable."

The spokesman added that ICL naturally was scrupulous in observing the various licensing arrangements imposed by the government.

In a more informal moment, another ICL manager remarked with some bitterness that he wished that data processing equipment and the companies which sell it were not used as political footballs.

The view expressed by ICL is reminiscent of that expressed earlier this year by senior executives in Control Data Corporation and in Cray Research when they were visited by *Computer Weekly*.

Few, if any, commercial companies relish the prospect of having their goods or services caught up in political rows, particularly international rows.

Unfortunately, data processing equipment is now caught up in a divisive, confused and potentially devastating argument between the US and its NATO allies on the one hand, and between the US and the Soviet Union on the other.

The row in the US, which, like it or not, is the manufacturing source of much of the computer technology built in the West, is also deeply reflective of a series of warring departments within the current US administration. Leading the fray with a series of reports now wending their way towards the US Congress is the Department of Defence, the world's biggest buyer of computer technology, with an overall budget the size of the Canadian gross domestic product – $46 billion.

According to a number of electronics industry executives who have seen these early drafts, implementing them would reduce instantly the export business of all American technology companies by about 50%.

Stripped of its adorning argument and illustration, the main report, which has been seen by fewer than a dozen people in the US electronics industry, says that if the technology is used by the US military for any purpose, it should not be exported. Taken to its logical conclusion, that means if the US military use your microprocessor to play games in the PX(NAAFI) you cannot export it outside America.

THATCHER . . . *Didn't comply.*

While most American technology executives are sympathetic to the idea of controlling and monitoring computer and electronic shipments to the Eastern bloc, many of the pro-trade lobby have discovered an entrenched and unmovable DoD backed by the CIA.

While the US producers bewail their looming problems on the domestic front, their counterparts in Europe face far more serious problems.

The European computer producer who is sourcing some or all of his product from the US would face three major problems. His US supplier has to ensure that the goods he is supplying are intended for internal European use and are not on the DoD weapons list, or the Department of Commerce list, which the US military is attempting to wield increasing control over.

In Europe the assembler has to ensure that his final product is not on his own country's list of licensed or prohibited products. The UK has two lists, run respectively by the Department of Industry and by the Ministry of Defence.

Having crossed all those hurdles there is a third and last hurdle which is getting clearance from the Committee for Co-ordinating Exports (Cocom) in Paris, an adjunct to the US embassy there, which controls all movements of technology between the NATO countries and Japan and the Soviet Bloc.

When President Reagan invoked sanctions against UK-based companies over the Siberian gas pipeline, even his erstwhile ally, Margaret Thatcher, refused to comply, ordering the UK companies to meet their contractual obligation to the USSR.

Her reason for revolt was simple. No country has an automatic right to interfere in the domestic affairs of another country. The US was indulging in what is legally termed "extraterritoriality", which is the imposition of domestic laws in other countries.

Having failed disastrously with the embargo and caused a major rift inside the NATO alliance, the US decided to use other means to pursue its cold war against the Soviet Union. The means chosen was Cocom, where the US, at the instigation of the US DoD and the CIA, is trying, so far without success, to establish a military committee to control exports to the Soviet bloc.

The UK in particular has virtually refused to permit the convening of the meeting to consider the matter and there isn't far to look to find out why.

The US, in what must amount to a fairly original piece of diplomatic naivety, indicated that the military committee would control a new list which would include all the equipment the US had failed to block for the Siberian gas pipeline.

But the anti-technology shipment lobby has been unable to counter arguments put forward by Dr Ray Curnow, now professor of technology management at the City of London University. Dr Curnow, quoted in *The Guardian*, cast doubt on the viability of basing Russia's missile technology on stolen chips.

The logic here would seem to be irrefutable. What happens to Soviet weaponry if the supply of chips dries up?

There is obviously only one reliable source of chips for Soviet weapons and that is from Soviet factories. And here the argument against the free availability of volume production technology falls down.

It became clear during the attempt to embargo the Siberian gas pipeline that all the embargo could achieve was an acceleration in the pace of Soviet heavy equipment development and a loss of orders and jobs to the West.

Most of the recent cases involving unlicensed computer shipments have related to the most mature and readily available of western technology, like the PDP/11 VAX machines seized in the UK.

What has not surfaced yet is the unlicensed transfer of items such as the IBM 4331, which recently turned up in Poland, or the 3081 in Czechoslovakia.

And CDC supercomputers are legally installed behind the Iron Curtain.

If it is possible for an American company to ship such machines to eastern Europe, why the sudden paranoia about what European technology companies are doing, as few, if any, produce machines even remotely similar to the CDC 7600 and Cyber 205?

Data Process[illegible] should try this sim[illegible] cost-cutting exe[illegible]

Take the short[illegible] savings and send [illegible] Ferranti PT7.

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LONG . . . *Very British.*

Honeywell's Long future

IN 1978 Brian Long became the first British national to be managing director of Honeywell's UK operations. He regards Honeywell Information Systems Ltd as being "very British", and points to the fact that Information Technology Minister Kenneth Baker said as much when he opened Honeywell's new Systems Division headquarters last year.

Most American computer manufacturers try hard to push their UK credentials, but Honeywell can give some support to its argument. Through its controls division it has been in the UK since the 1930s. Honeywell Information Systems started in the UK in 1963, and Long says the company has constantly invested in the UK, and constantly reinvested its profits.

In 1982 Honeywell recorded its eighth successive year of growth in the UK, with sales reaching the £100 million mark. Long is proud that even through the recession the company has maintained full employment in the UK – not a situation mirrored in the US, where about 2,900 people were laid off last year. For the past few years Honeywell UK has been among the top performers in the whole Honeywell group.

Honeywell is "very broadly based in the UK," Long says, and is not just "importing and selling". And 1983 marks the twentieth year that Honeywell has been manufacturing in this country, with the 1,000th minicomputer shipped from its Newhouse, Scotland, plant last year.

Before Long took over as managing director there had always been a US managing director and a US financial director. Now Honeywell has an almost totally British team, with the exception of a few specialists. Long, who entered the data processing industry in his early twenties, took the route of so many by joining British Tabulating Machine Company, later to become ICT. He went to Honeywell after 10 years, where he headed various divisions until his 1978 appointment.

Long emphasises that the UK operation is "extremely autonomous". "We spend a long time agreeing our long range plan with corporate headquarters, but when we have agreed we have great autonomy."

There has been some criticism in the marketplace that Honeywell's technology is lagging behind the leading edge. It is well known that users are always looking for "next year's" technology; but the delay in the release of Honeywell's office automation product is cited as an example of how Honeywell is a year or so behind.

Long deflects such criticism by stating that "we try to bring products to the marketplace when they are ready, and we try to sell what is available."

Honeywell continues to get many new accounts in the UK, which he believes is proof that the company is putting out good products. Certainly Honeywell's users have a high regard for the company, and there seems to be a general belief among them that Honeywell is evolving a co-ordinated approach to meet their growing needs.

While there has been a lot of hullabaloo lately about manufacturers adopting a line of business approach to selling, Honeywell maintains a geographical sales organisation. Long says the company has studied a number of different approaches, and decided that geographical selling remains the best option.

Honeywell can be very responsive . . . it does not have to get on the bandwagon for a centralised system or a distributed system

Honeywell provides specialists in certain areas, and gives local support to major lines of business. But Long believes that the line of business approach does not get the company close enough to the customer. With so many different business sectors to attack, a national centre to confront individual markets does not make sense. Long says Honeywell has been able to harness the best of both approaches, and indeed points to the fact that a number of companies have pulled back from the total industry method of marketing.

An industry trend which Honeywell is following is the move towards collaborative ventures with other high technology companies. Honeywell continues to hold a stake in the French computer company Cii-Honeywell Bull, although it was decreased last year from 47% to 19.9% in exchange for $150 million in cash.

Long says the Cii-HB link is still very important to the company. Honeywell gets the DPS7 minicomputer from Cii-HB, and has a 10-year technical and commercial agreement. The arrangement is particularly useful in international deals, Long says.

Honeywell is "very receptive" to collaborative agreements in general, and is talking to the Japanese NEC "to see whether there may be some common ground for cooperation". A number of links have been made in the US with communications companies – Action Communications in Dallas, Telecamerica, TR Communications, and Executone.

"I would see similar types of developments in the future. Honeywell may not want to personally develop everything," Long says. The corporate organisation is out "looking around," particularly for collaborations that would strengthen the company in particular niches.

The so-called "niche strategy" has three front runners: networking, office automation, and manufacturing, with a heavy applications thrust. In the UK retailing is also a priority. While there are certain corporate objectives, each country will build on its own strengths. An example is Honeywell's involvement with the retailer Littlewoods, the largest UK installation for Honeywell with something like £20 million in equipment.

And it is the niche strategy that Long sees as the way of countering the threat posed by Japanese technology. "Anyone who says Japan is not a threat doesn't understand the business."

But Long is undaunted. "It makes it exciting. It sharpens the edge." He points to Honeywell's strength on the ground, which is the advantage of large, established companies like his own.

One of the niches where Honeywell is having some success is in networking. There is an element of networking in almost all of its sales, Long says.

For the future Honeywell intends to have an "all embracing communications strategy for the most extensive and complicated networks as well as the most straightforward applications." That strategy relates strongly to its work in office automation, and the PABX situation is being studied closely.

The microcomputer Honeywell will release in the UK next week will be very strong on networking, and represents a vast evolution from the intelligent terminal of only a few years ago. Central to any network will be a powerful mainframe for some years to come, Long predicts – a heavy number cruncher, with communications, networking, and functional software.

The big strength of Honeywell is that it can be very responsive either way, Long says; it does not have to get on the bandwagon for a centralised system or a distributed system since it can provide both. Requirements of different organisations vary according to their internal "culture" – or how management wants to develop the company.

For all its strengths, Honeywell still has some way to go in getting its message across. One never does enough in that area, Long admits, but then he says there is no special magic: one can only be clear on the message.

For the data processing manager, who must be somewhat overwhelmed by the diversity of the computer business, Long sees a number of major issues. He should be thinking about application software, increased user facilities, increased programming aids, communications and office automation, and in greater portability of software.

Long advises the DP manager to be responsive to the aspirations of the board – which way do they want to go "culturally".

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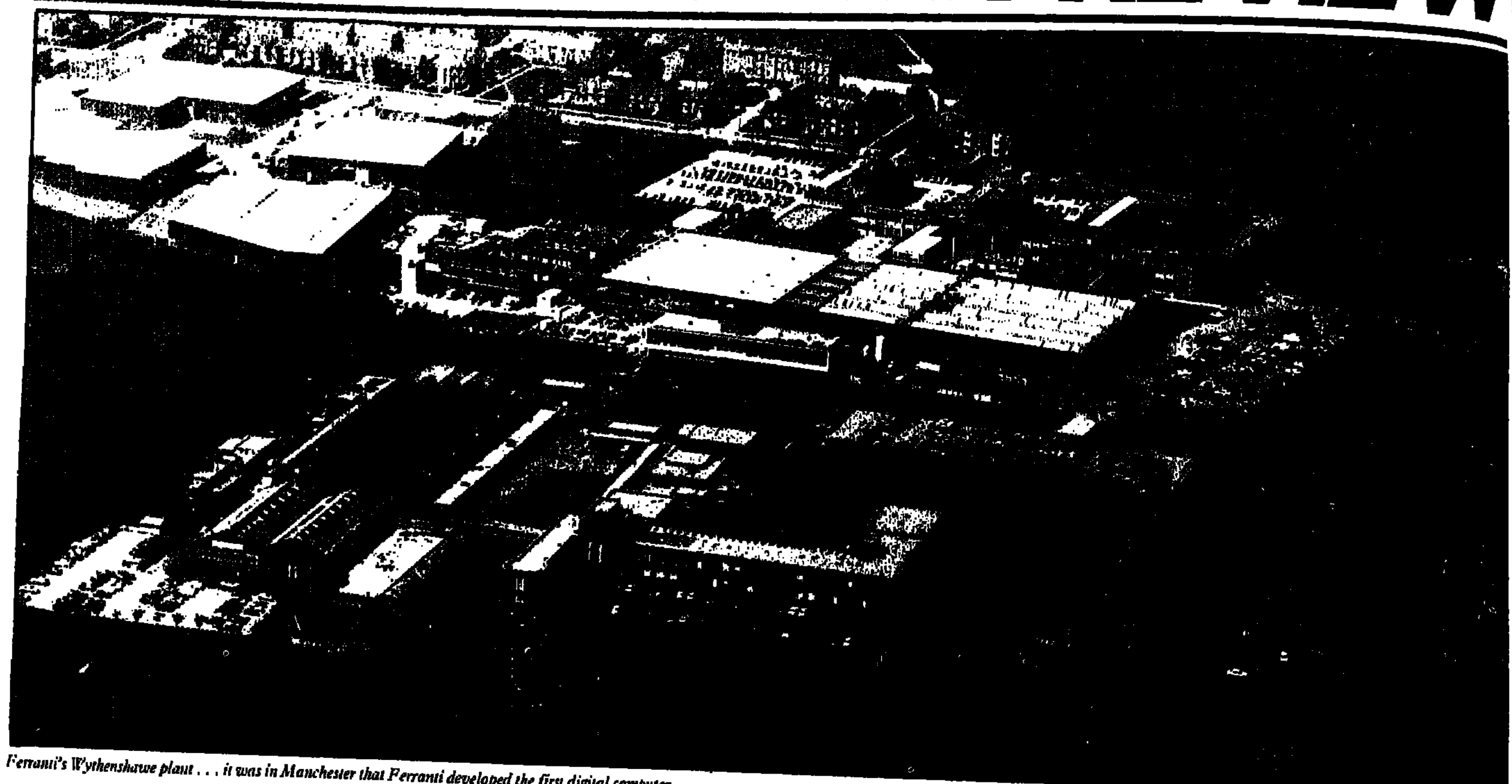
COMPEC NORTH PREVIEW



Ferranti's Wythenshawe plant . . . it was in Manchester that Ferranti developed the first digital computer.

The north may be swathed in unemployment gloom but Della Bradshaw thinks there's plenty to boast about.

Northern lights Ferranti and ICL shine in the gloom

THE north of England, from Nottingham and Manchester to Newcastle and Carlisle, conjures visions of mass unemployment and gloom. But it was at Manchester University over 35 years ago that the world's first digital computer was developed, and that back in 1950 Ferranti produced the Mark I Star in Manchester – Europe's first contribution to commercial computing.

These days the north still boasts some of the strongholds of Britain's computer and electronics industries. ICL, Plessey, GEC, Philips . . . the list goes on.

The first National Computing Centre in the UK is in Manchester, and the North-West Industrial Development Association claims that foreign companies are also heading for the north – there were 650 of them in the north-west at the last count.

That said, companies in the north have been faced with the "recession" as much, if not more so, than firms elsewhere in the UK. Both ICL and Plessey, Britain's leading light in the telecommunications field, have released their annual reports and accounts. Both show encouraging – in Plessey's case massive – profits, but at the cost of jobs.

ICL, successor to the old English Electric computer company in the north, and the UK's last remaining world league computer company – (it is the world's 10th largest) – is the most important of the information technology businesses in the north.

For that reason ICL's recent recovery from the financial collapse, which all but wiped it out in 1980, is vital to the battered economy of the region.

But the price of recovery was very high in terms of employment; over 9,000 of the original 30,000 jobs went, many of them in the north, at Kidsgrove, Winsford and West Gorton.

The Winsford factory closed altogether, adding another empty building to an industrial estate already full of vacant offices and workbenches. The PCB plant at West Gorton was saved by the intervention of Fujitsu, ICL's Japanese partner in high technology for the new computer ranges the company is developing.

But for every job lost, there is now hope that new ones will be created as ICL's participation in the recession-proof growth of the computer industry begins again.

Exactly 20 years ago the Atlas division of Ferranti built and delivered the Atlas 1, the biggest mainframe in the world in its time. The computer, which took 19 trucks to move to the Rutherford Appleton laboratory at Swindon, was a one MIP processor, with 48Kbytes of main memory.

Two months ago ICL delivered an Atlas 10, in one truck, to the same laboratory. The new machine, with a processing power of 15 MIPS, had 32Mbytes of main memory but was built in Japan.

However, Robb Wilmot, ICL's managing director and architect of its recovery so far, sees the Atlas as a tactical machine in the strategic battle to win IBM business and keep ICL in the big machine market.

When Wilmot got to ICL in 1981, the company was suffering a cash drain that seemed destined to destroy the organisation. Wilmot's options were extremely limited, and harsh though they were, they have kept the company sufficiently in business to contemplate two vital new machine ranges, the DMI and the Estriel.

The DMI is a small mainframe which will succeed the very successful ME29. The chips for the new machine will come initially from Japan, but the entire unit will be built in the north, at West Gorton.

That will bring new jobs to the north. Exactly how many is very difficult to say, but if the DMI is half as successful as the ME29 the number will be substantial.

But the DMI at two MIPS is only one step in the complex product strategy that Wilmot has evolved to retain ICL's position as a medium to large mainframe supplier. The second step in his strategy is the development of the Estriel, a seven MIP medium range mainframe which is capable of substantial upgrading, to 25 MIPS and beyond, by tight coupling of the central processors. The Estriel will run under the VME operating system which was itself developed in the north, partly under the auspices of Manchester University's computer science department.

"If you look at a map you'll see we're right in the middle of Great Britain" – Leeds-based Systime spokesman

Although the Estriel is targeted at the key growth sector in the mainframe area, which is the IBM compatible environment, the machine is actually constructed using the old 2900 architecture, which was developed by ICL – again in conjunction with Manchester University.

The chips for the Estriel CPU will come from Japan, from Fujitsu, but the extent of Wilmot's commitment to bring computer manufacturing on a large scale back to the north can be measured by the fact that, of the 75,000 sq feet of PCBs needed in one year of manufacture of the Estriel, less than 2,000 sq ft will come from Fujitsu. The remainder will be built in West Gorton by ICL.

Plessey is also in a similar position. It recently announced £146 million profits – an increase of 31% on 1981/2 – on a turnover of £1 billion. One of the main reasons for the increased profit was that Plessey had sold various businesses, notably the capacitor and resistor arms, but streamlining the many branches of the company has also played a part. Plessey's workforce in the UK now numbers 30,723, a decrease of 2,300 on last year.

One of the main areas of job losses is in the switch over from the manufacture of electro-mechanical switches at Plessey's Edge Lane plant in Liverpool to the development of the electronic main line switch System X.

More than 400 of the 4,000 jobs at Edge Lane are to go within the next few months, but it was in the telecommunications area that Plessey made both its turnover and its profits last year. Telecomms accounted for 47.2% of the turnover – up from 43.5% the previous year – and 56.8% of the profits.

Edge Lane is not Plessey's only set up in the north. There is also the Cheapside works in Liverpool, which make microelectronic systems, the Lamberhead Green factory in Wigan, which makes telephone equipment, and the Beeston works in Nottingham.

But the bad news in terms of jobs for ICL and Plessey is not necessarily detrimental to other companies. United Peripherals is a case in point. The disc and memory manufacturer was set up about three and a half years ago in Winsford, in the factory which ICL had decided to close down. The 27-acre site cost Data Recording Instruments, the holding company for UPL, nearly £7 million – about a third of what the factory was worth.

UPL had originally intended to set up in Crewe, and had already spent £200,000 on a site there. But the move to Winsford saved 550 of the 1,000 or so jobs that the departure of ICL created – even though UPL now has a factory which is about 100,000 square feet too big!

UPL is now set to deliver £28 million of products this year, mainly two hard disc drives, the 14 inch Hawk and the Phoenix. A design group at Winsford is working on the "Windsor" disc, an eight inch fixed disc with a thin film head and capacity of 200 Mbytes. That will be marketed in the US by Control Data Corporation (CDC), as well as in the UK.

Peter Gregory, chairman of DRI, says shares in UPL are expected to be sold privately in about 18 months. At the moment UPL is part financed by CDC, which has 24% of the equity, and the British Technology Group (BTG) which injected £12 million of cash just over a year ago.

UPL is certainly one of the BTG/CDC success stories, but does not rank quite yet with the other blue-eyed company of the BTG/CDC partnership – Systime. Since its formation in 1972 in Leeds, Systime claims it has become the largest supplier of turnkey systems in Britain.

In the past eight years the firm has expanded from a £1.2 million turnover a year set up to a £44 million a year company, and is constantly expanding its factory space. Only a year ago it announced another £20 million plan to build another factory, now completed and opened this month.

Systime currently employs about 1,400 staff, and intends to create another 80 jobs in the next six months. And if that is not enough the firm is still expanding at 40% a year and has an expected turnover of £60 million for the coming year.

CDC now owns 40% of Systime – it is the biggest single shareholder in the company – and has injected £8 million in capital. Systime will probably go for a stock exchange listing in the next six months.

Systime currently exports about 30% of its products, and has a nationwide servicing operation for the other 70%. Being centred in Leeds, Systime claims, has positive advantages. "If you look at a map you'll see we're right in the middle of Great Britain", claimed

■ Continued on page 25

COMPEC NORTH

Companies show the north can thrive

■ From page 24

a spokesman for Systime. "We're on all the major motorways and the airport here at Leeds is being extended, so in two years time it'll be one of the major airports in the UK. I'd like to think they're doing that because Systime is here, but I don't think I can really claim that."

Another company that does not seem to think marketing was any problem from the north of England is Gandalf, the Warrington-based data communications company. Gandalf was set up about 10 years ago and now has a staff of between 80 and 85 people. It has a field services department in Middlesex, but all its main business is done from its sales department in Cheshire. "We have no problems at all centring our marketing on Warrington", said a spokesman for the company. "If customers want modems or multiplexers then they come here to Warrington for them."

One company which is a little more dubious about the advantages of being based in the north is Derwent Data Systems, which set up in Sunderland in April 1981 as a one man outfit. Since then the company has expanded to a staff of about eight, writing software packages for C/PM and MSDOS micros. The best known of those is the database management system Retrieve, but accounting, financial modelling and word processing packages are other products. As well as software distributors Derwent Data Systems also claims companies like ICL and NEC among its customers.

"Is being in Sunderland a disadvantage when it comes to marketing? Yes and no," said George Perfect, the founder of Derwent Data Systems. "Our software goes to software dealers and to computer companies. At the dealer level they don't really care where you are – once the software has been demonstrated to them then we just post it to them.

"Most of the computer companies are in London, though, so to do business with them we have to physically travel. That said, we are very conveniently placed for doing business with Scotland – it's been a positive advantage."

Derwent Data Systems is also looking abroad. Perfect claims that up to 75% of the firm's income this year will come from exports, especially to the US and Australia. "And it's just as easy to sell software abroad from Sunderland as from anywhere else in the country," he claimed. "Just because companies are in Sunderland doesn't mean they can't grow or expand." Just so – his company is expecting a turnover of up to £3¾ million this year.

Good news in the north is not just limited to the mini manufacturers like Systime, though. Micro vendor Keen Computers in Nottingham is also on the success trail. Tim Keen, managing director and founder of Keen Computers, started the firm to write software packages for Apple micros. But things have expanded. In 1979 Keen took on two American products to market – the Onyx microcomputer and network products and storage devices from Corvus systems – to market.

About nine months ago the company set up an independent software house, Atlantic Software, to market software on both sides of the Atlantic and in Australia, and to sell Unix and CP/M software back to Keen Computers.

Keen is not short of big name customers, either. British Telecom placed an order two months ago with Keen for Plexus computers running Unix for development of the System X digital exchange.

Overseas micro manufacturers are also settling in the north. The Japanese firm Sharp established its head office in Manchester in 1969, and has not looked back since. In 1977 it had a turnover of £31 million in the UK, and by 1981 had increased that to £100 million. All that income is for sales in the UK – Sharp does not use Great Britain as a stepping stone for Europe.

And things are still on the way up. A new warehouse is due to be opened in August to provide an extra 600,000 square feet – that will cost another £1 million to the £2 million Sharp has already spent on construction in the UK.

Commercial backing is there for northern micro manufacturers, too. Positron in St Helens is a case in point. It was the first company to be backed by the BTG's Anglo-American Venture, which aimed to bring technology from America under licence for manufacture in the UK. But Positron went one step further and designed its own micro – the 6809-based Positron 9000.

The machine, launched last September, operates under OS/9, a Unix-based operating system designed especially for the 6809. It is aimed at "systems integrators waiting to move down from minis" according to Ian Kendrick, who is in charge of dealer support at Positron.

And it is not just a question of companies setting up in the north and selling their products in the south. The London Stock Exchange is the heart of the nation's financial centre; nonetheless 37% of all business conducted on the stock exchange is processed in a relatively tiny bureau in Nantwich, Cheshire, by NMW Computers.

"It's just as easy to sell software abroad from Sunderland as from anywhere else."

NMW is very definitely a northern firm. Not only does its managing director, Brian Johnson, come from Manchester, so do its two ICL 2972 mainframes. And its front end processors, both Ferranti machines, come from down the road in Wythenshawe. NMW's operations saw a profit of £800,000 last year on a turnover of just £2.9 million, and this year profits are expected to hit the £1.2 million mark. Just in case things do not go too well, NMW keeps a kitty on deposit – of £1.5 million.

NMW has not done too badly at showing the stock exchange how to keep its house in order, either. Johnson spent £3 million to develop Capital, a system to run the London Stock Exchange business. The Stock Exchange also built its own system, "Talisman", and that cost them £17.5 million.

NMW is currently involved in testing an intelligent terminal which is designed to download some of the NMW software into the offices of the stockbrokers who use its services. From a staff of seven in 1972 NMW now employs 80 people, and also provides all of the key members of the Dublin stock exchange with their computer services.

Another very "northern" company, and a "northern" company of more vast dimensions, is Ferranti. Like ICL Ferranti was rescued by the old National Enterprise Board (NEB), and since then has brought substantial prosperity to the north.

When Ferranti hit the financial rocks it was a specifically "financial" crisis – that was eventually proven when Derek Alun-Jones recovered the company without the loss of either a single board member or a single senior manager.

The company lost very few jobs, even at the time of the crisis, and has increased employment ever since. Ferranti now employs the majority of its employees in the north of England and more than 25% of them in jobs that have been created in the past five years.

The company continues to manufacture computers, mostly for military purposes, though there is a thriving commercial division based at Wythenshawe. The main products produced by Wythenshawe are the Ferranti F7 intelligent terminal and its minicomputer. Alongside the standard products Ferranti also produces a range of specialist systems, such as whole telemetery and data processing systems for oil rigs.

And it is these specialist applications which are perhaps the heart of Ferranti's business, according to Derek Alun-Jones. He sees the company as an organisation of specialised skills, which partly explains why Ferranti has never become a bulk supplier of standardised boxes.

He sees the company securing its future through the application of these skills, rather than as a mass producer and manufacturer – despite the fact that the company is of course a major manufacturer. In one area in particular Ferranti has gone out applied its electronic design skills and led the world.

This is in uncommited logic arrays. Based on little more than a one third share in a government grant of £10 million, Ferranti now has 30 to 40% of the world market in these devices with design offices in the UK, US and Hong Kong.

Apart from the new factory which Ferranti has opened this month in order to become its own primary supplier of the designs produced, it employs 1,700 people in its ULA divisions. The factory, housed in an abandoned Remploy building, took exactly one year from purchase to production, and cost little over £10 million.

Ferranti also reveals its profits this week, and there are no prizes for guessing that the company is going to be very positively in the black – an expected £30 million on a turnover of £380 million.

And when it comes to winning prizes, there is a Bradford firm which knows exactly what it is doing. Microvitec, the maker of colour visual display units, picked up a cheque for £25,000 from the Hill Samuel Anniversary Awards competition last November, and then completed the rounds by adding a silver cup and £15,000 to the coffers by winning the Bowater Industrial Achievement Award the following month.

On the software side there is a company based in Manchester with a name to fit the bill, Northern Software. Northern Software is not bad at picking up prizes.

Founded in Manchester in 1970 Northern Software has won ICP prizes left, right and centre for the popularity of its software packages. They include packages for accounts, in particular including VAT calculations – NSC receives £50,000 of orders for its packages in 1973 when VAT was introduced – and for compilation exercises.

The latest package, introduced in January this year, is a real time database accounts package, and was launched amid a flurry of controversy and backbiting. Howard Sherrington, managing director and founder of NSC, claimed that any company that bought an accounting package that was *not* database or real time would find it had bought an obsolete package in a few years time.

"Anyone who buys this type of package is wasting their money," Sherrington claimed. Needless to say several other companies producing accounting packages had very different opinions!

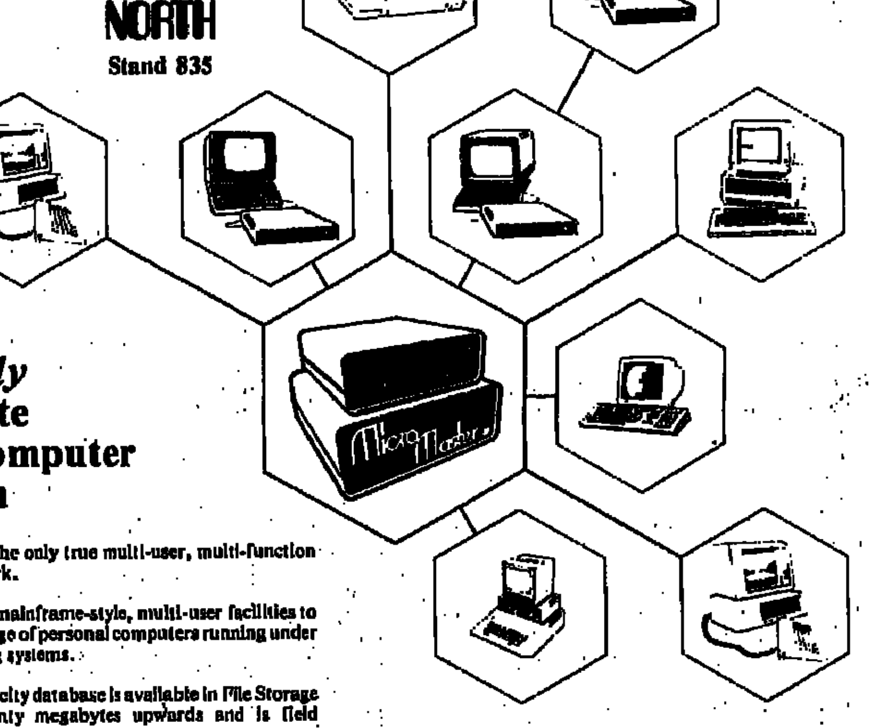
■ More Compec North on pages 34 and 35.

Northern people...

KEEN . . . Success trail.

GREGORY . . . His UPL took over ICL's Winsford factory.

ALUN-JONES . : . His Ferranti is one of the north's successes.



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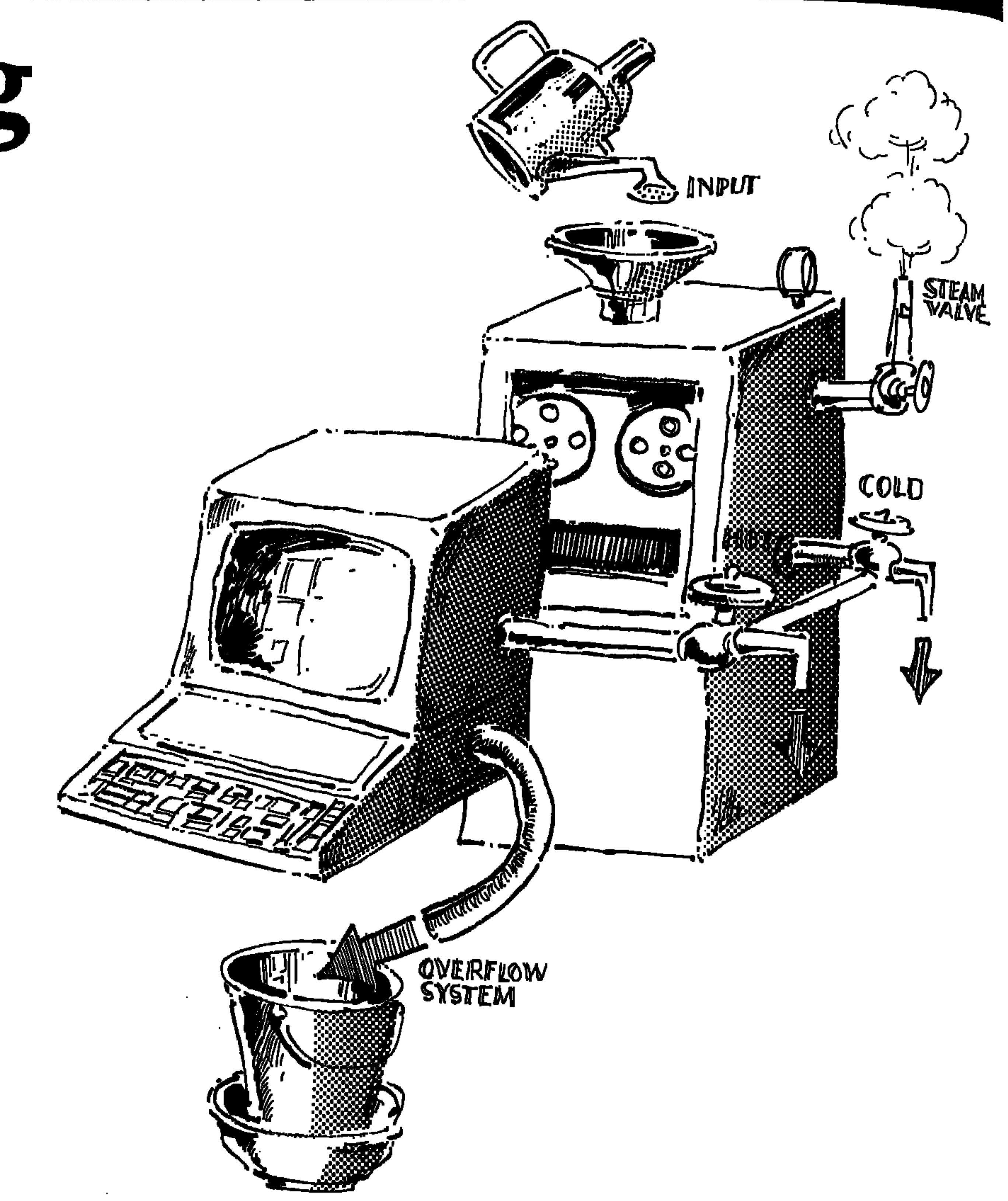
OPTICAL COMPUTERS

Switching on to the optical system



A radical rethink is required of those who believe the computer to be an intrinsically electronic engine, according to Robert T. Street

ABOUT two years ago headlines in the Japanese Press heralded, with the usual exaggeration, the advent of the "optical computer" which would be capable of working at close to a trillion operations per second ("one trip" perhaps?).

But, unlike the usual Japanese trumpetings, this was not a Japanese invention, it was nothing to do with a Japanese company and was not remotely related to Japanese technological research.

More prosaically and in fact, nobody had invented an optical computer, but a team at Heriot Watt University headed by the Dean of the Faculty of Science, Professor S. Desmond Smith FRS were well on the way towards designing a series of devices which would make such a pipedream quite a lot closer to realisation.

To see how close would require some radical rethinking by those who believe the computer to be an intrinsically electronic engine.

It needn't be, since the base needs are a form of switching, by present-day needs, from binary one to binary zero and back. A group of these switches registering ones or zeros act as memory and can be the fundamental of the controlling mechanisms.

How those switches are implemented doesn't really matter in logical terms, but is certainly important when speed is of the essence. It's quite possible to have a hydraulic computer working with oil, water or any other fluid. It's faster to use valves as switches, as the bulky mainframes of the 1950s did.

Speed is really increasing when transistors are used and will approach the ultimate if light is applied as a switching medium.

But how can light be used as an on-off mechanism? The answer, in short, is the use of a laser and alterations in the intensity of the light beam it produces as it enters a crystal. If, on entering the crystal, changes in intensity can ensure that the quantity of light reflected back also changes from large amounts to very small ones, with corresponding changes in the amount of light going through the crystal, then the basis of a switch exists. In other words we have an "optical transistor".

Professor Smith and his colleagues, with doubtless Star Wars and Blake's Seven reasonably fresh in their minds, have christened this optical transistor a "transphasor", even though, less romantically, a change of light phase is involved.

To make it practical, you need not only certain crystals but a means of control. The crystals of certain materials change their refractive index when light is shone on them with different intensities. If you stand in front of a plate glass window, then your reflection is going to be clearer or not so clear, partly as a result of the intensity of the sunlight you're standing in, although no change of refractive or bending index is involved here.

The bending effect of the medium, in the case of the transphasor, a crystal, is comparable in some ways to the bending effect of water droplets which produce a rainbow. The different parts of white light are, in effect, slowed down relative to each other, by the effect of the substance through which they pass – that is, in the rainbow's case, water, giving the well-known multi-coloured spectrum.

To get a better idea of how the transphasor works, there is nothing better for illustrative purposes than an ingenious device called the Fabry-Perot interferometer, a rather forbidding name for a widely used piece of apparatus, where everything is done by mirrors. Its original design intention was to measure the wavelength of the various colours of light.

The simplest form of this device is a pair of plane mirrors parallel to each other and separated by a space. Any material which transmits radiation with the wavelength of interest is inserted into the space, which acquires the name "cavity". Each of these parallel mirrors partly reflects this radiated light and partly allows it through – as in the case of the light from your body when you are standing in front of a plate glass window.

Suppose this plate glass window has another which is exactly the same located behind it, thus forming the two parallel mirrors of an interferometer. If the plate glass window you're looking into reflects 90% of the light (in other words it's one of those semi-silvered ones) and allows 10% through, then the rear plate glass window which you cannot see will get only 10% of the light. If this rear plate glass window has precisely the same properties as the one you're standing in front of, it too will reflect 90% of the light and allow 10% through.

This bouncing of light from front to back goes on with the amount of light getting weaker each time until it finally fades out. The forward beam through the first plate glass window and the reverse beam, back from the second can be treated as light waves propagated through the cavity, the space between the two windows.

The interaction of these two beams is crucial for design of the transphasor. The result of any interaction between forward and reverse beams depends on the alignment of the crests and troughs of the light waves. Crests can align with crests and troughs with troughs and there can be any variation from this total alignment to the reverse, total disalignment, where crests are aligned with troughs. Crest with crest is called constructive interference with thus a large amplitude and the opposite is destructive interference with correspondingly a small amplitude.

The actual final alignment can be made to depend on the material in the cavity – air in the case of the plate glass windows, but in the interferometer itself, any material can be placed in the cavity. By choosing a material with the right refractive index, forward and reverse beams can be made to interfere with each other as required. For example, if a certain type of glass is used, with a refractive index of 1.5, as the material in the cavity, then light travelling at 300,000 kilometres per second in a vacuum would be reduced to a speed of 200,000 kilometres per second in this glass. Slowing of light is accomplished by a reduction in the wavelength, but the frequency stays unchanged.

If the material in the cavity is then altered, a different amount of transmitted and reflected light results. So this change of material in the cavity provides the basis for a very clumsy optical switch.

However, it has been found that the refractive index, resulting in changes in the transmitted and reflected portions of the light, can take place as a result of changes in the intensity of the light, in certain materials. In more scientific terms, these materials have a non-linear refractive index in relation to the intensity of the incident beam of light. This fact became particularly apparent when the laser appeared.

By shining laser light on a material with this non-linear refractive index and gradually altering the intensity of the laser light, a point is reached where the incident beam and the changing refractive index coalesce to form positive feedback, giving a transmitted intensity of not far off 100% of the incident beam's intensity.

It is found that reduction of the incident light from this peak does not result in linear reduction in the transmitted light's intensity, but continuing diminution of incident intensity will reach a point eventually where the refractive index and the intensity in the cavity reach a stage of opposition. At this point, there is a sudden drop in the transmitted beam's intensity.

This is typical of the so-called bistable optical devices where there are two stable regions, one when increasing the intensity of any incident beam and one when the intensity of that beam is decreasing. In each of these stable regions, the amount of light transmitted changes very little with changes in the intensity of the incident beam, until a point is reached corresponding with the end of the stable region, where a very little alteration in the intensity of the incident beam will produce a very considerable change in the transmitted beam's intensity.

They are called bistable because of the existence of the two stable zones.

The problem now is to find a material which provides bistability of the type required. Professor Smith and his colleagues have carried out a great deal of research into this area and have been using indium antimonide as the experimental material. This substance allows the promotion of electrons from one band to another, most importantly to the conduction band, where the thermal energy of the crystal causes them to scatter to other close-by energy levels. This promotion and the subsequent scattering is the reason why the refractive index of antimony antimonide to alter.

The author expresses his thanks to Professor Smith and his colleagues for their help.

A working device within four years is the aim

JUST what an optical computer will be like is a matter of guesswork, but one area which could benefit is that of parallel computing.

This arises because, compared with an ordinary electronic translator, there can be several switching currents from a laser which will not get confused, because of the nature of laser light, whereas with a transistor it is difficult to use more than one current.

The transphasor could have several beams through it after splitting an original signal beam into several parts.

How long before a working optical computer is available? Professor Smith and his colleagues are understandably cautious, but they are willing to say that they will have some sort of working device, not necessarily a computer, within four years.

The main problem currently and the area at which maximum investigation is being pressed, is that of finding a suitable material. Indium antimonide is excellent for switching from what would correspond to zero to one, but extremely slow, relatively speaking in the reverse direction.

The actual times appear to be a few picoseconds upwards and a 100 nanoseconds downwards.

As a result of this research, little work has been carried out on costing, but Professor Smith and his fellow researchers are very optimistic on this score, although, they stress, it is early days yet.

PEOPLE

■ Fortune Systems has appointed **Garth Selvey** (below) as UK distribution manager. He will be responsible for all liaison with Fortune's distributors and its dealer network, and will coordinate marketing, promotions and exhibition plans. He joins Fortune Systems from Ontel International (UK), where he was responsible for sales, administration and technical support for European distribution accounts as European account manager.

■ Comart has appointed **Roger Tucker** as sales administration manager. He has more than 15 years' experience with high technology companies, having previously worked with Cambridge Instruments and Ling Dynamics.

■ **Ian Farmer** has joined Xionics as distributor network manager. He has previously worked for AES, Rank Xerox and SCM, in sales and training. His last role during his three years with AES was as UK sales training manager.

■ **Peter Edwards** has been appointed sales director of the hardware maintenance division of Software Sciences, which is part of Thorn EMI's information technology division. He was previously with Computer Field Maintenance, which he joined in 1973 as an on-site maintenance manager. He moved into sales and was regional area manager before being promoted to UK sales manager in 1982.

■ **Phil Stapleton** has been appointed vice president and director of business development for National Advanced Systems (Europe). He returns to London after spending two and a half years at National Advanced Systems' headquarters in Mountain View, California, as director of strategic planning.

■ **Mike Bateson** has been appointed marketing director for Ericsson Information Systems. He will be responsible for all sales and marketing activities. Bateson joined Ericsson in 1981 to spearhead its planned expansion in office technology within the UK.

■ **Raymond Harrington** (below) has been made manager of the Co-operative Insurance Society's data processing department. He was systems development controller with the company for about 14 years.

■ Future Technology Systems has appointed **Dan Reid** as OEM sales manager. Based at FTS' newly opened offices in Knightsbridge, Reid will be responsible for major OEM sales throughout the United Kingdom. He joins FTS from recent experience of small dealers and micro systems houses. Before this he was with Rair.

■ **Alf Glückman** has been appointed managing director of Enator (UK). He joined Enator AB, Sweden, in 1980, and has been chief consultant and account manager for the company's major clients.

■ **Ken Johnson** has been appointed customer engineering manager of Memorex UK. He was previously the company's customer engineering services manager for over four years where he was responsible for the technical support for users of Memorex equipment.

■ **Mike Dowler** (above) has joined Newbury Data Recording, which was formed last year by the merger of DRE and Newbury Laboratories, as European OEM sales manager. He originally left DRE two and a half years ago to become southern sales manager for Terminal Display Systems.

■ **John Mostyn** has joined Michael Jackson Systems as a consultant and lecturer. Formally with the education division of Altergo, Mostyn was responsible for the development and presentation of courses in PL/1, program and systems design, IBM operating systems and microcomputers.

■ Integra has appointed **John Anderson** to spearhead the sales of its Mobile Office product, based on the Epson portable computer. He was previously with petrochemical engineer MW Kellogg as manager of training and development.

■ Paradyne has appointed **Mike Bish** as field engineering manager, Europe. He will be responsible for European field engineering, European logistics and the establishment of a European product support group. He joins Paradyne from the Digital Equipment Company

DIARY

JUNE 22
The office of the future. BCS Sussex branch. King and Queen Meeting Room, Marlborough Place, **Brighton.** 7.30.

JUNE 23
Prime user conference. Bloomsbury Crest Hotel, **London.** Contact Roy Bulmer on Warrington 35953 Ext 2619 P.

AUGUST 30-SEPTEMBER 2
Second international conference on databases. BCS/University of Aberdeen, in co-operation with AGM/AICA/IEEE/GI/INRIA. Churchill College, **Cambridge.** Details from BCS headquarters.

SEPTEMBER 14
The Ada programming environment by Dr Valerie Downes, Imperial College. BCS **Bristol** branch.

SEPTEMBER 19-21
APL Business Technology 83. BCS APL User Group. **Loughborough** University of Technology. Details from BCS headquarters.

SEPTEMBER 19-21
IFIP Congress 83. BCS. **Paris,** France. Details from Peta Walmisley, BCS headquarters.

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Further information from: The Registrar, The University of Manchester Institute of Science and Technology, P.O. Box 88, Manchester M60 1QD. Telephone: 061-236 3311, Extension 2713; Telex 666094. Closing date for application, 19th August, 1983.

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Applications: Spreadsheet, Database, Text Processing Communications

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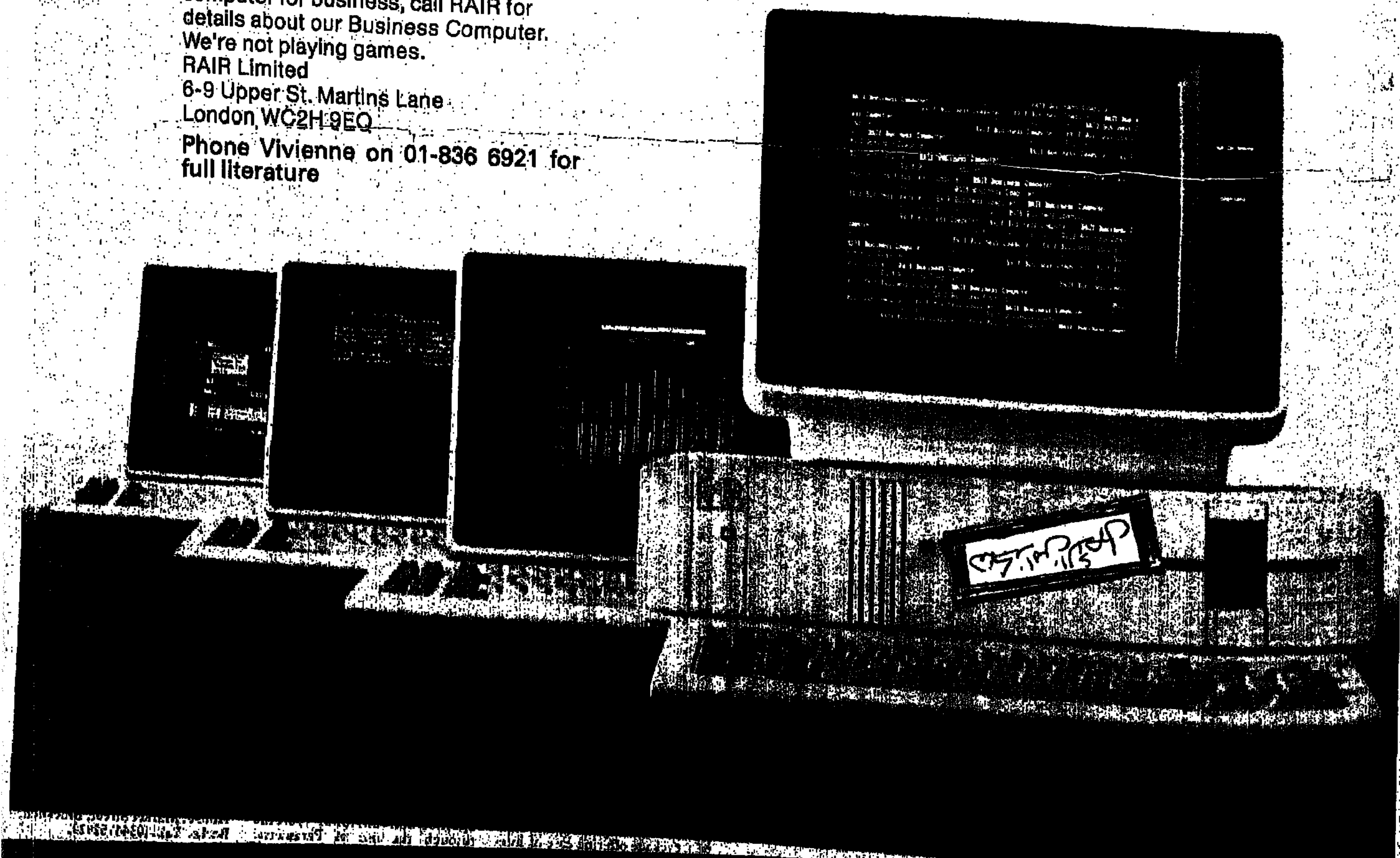


Desk is designed for micros

THE Panto computer desk from Office and Electronic Machines is designed for microcomputers and word processors.

The desk has separate levels for the display and keyboard and a unit to support the printer. Both units are 80cm square.

The units have steel frames and adjusters to compensate for uneven floors. They are finished in beige, non-reflective laminate and have rounded edges.

The display and keyboard unit alone costs £329. The complete desk, with the printer unit, costs £493.

Other items in the Panto range include drawer pedestals and storage units in laminate or wood veneer finishes.

Office and Electronic Machines (CW), 140/154 Borough High Street, London SE1 1IH. Tel: 01-407 3191.

Cabinet decision

CABINETS for Digital Equipment processors have been launched by UK systems house Computer Systems and Products. The company is European distributor for the Trimm range of cabinets for PDP and Vax processors and RX and RL subsystems.

Top-loading and front-loading cabinets are available. Outside dimensions are 41.64 inches high by 21.25 wide and 30 deep. Inside dimensions are 35 inches high, 19 wide and 26.75 deep.

Trimm cabinets for other manufacturers' equipment are available and there are also desks, work tables, printer stands and other furniture.

Computer Systems and Products (CW), Barrasford House, Goldsmith Street, Nottingham NG1 5JY. Tel: (0602) 415155.

Image offer to BBC users

IMAGE analysis for £295 is offered to BBC microcomputer users by Digithurst. The company's MicroEye interfaces a video recorder to a BBC model B to allow images to be captured on disc or a printer. The package includes software to enable the user to analyse the captured images.

The resolution is 128 picture elements by 128 on the BBC machine, although the package can also provide a resolution of 256 by 256. It can be run with other leading microcomputers from the likes of IBM, Sirius, Apple, Commodore and Research Machines.

Digithurst (CW), Leaden Hill, Orwell, Royston, Hertfordshire SG8 5QH. Tel: (0223) 208926.

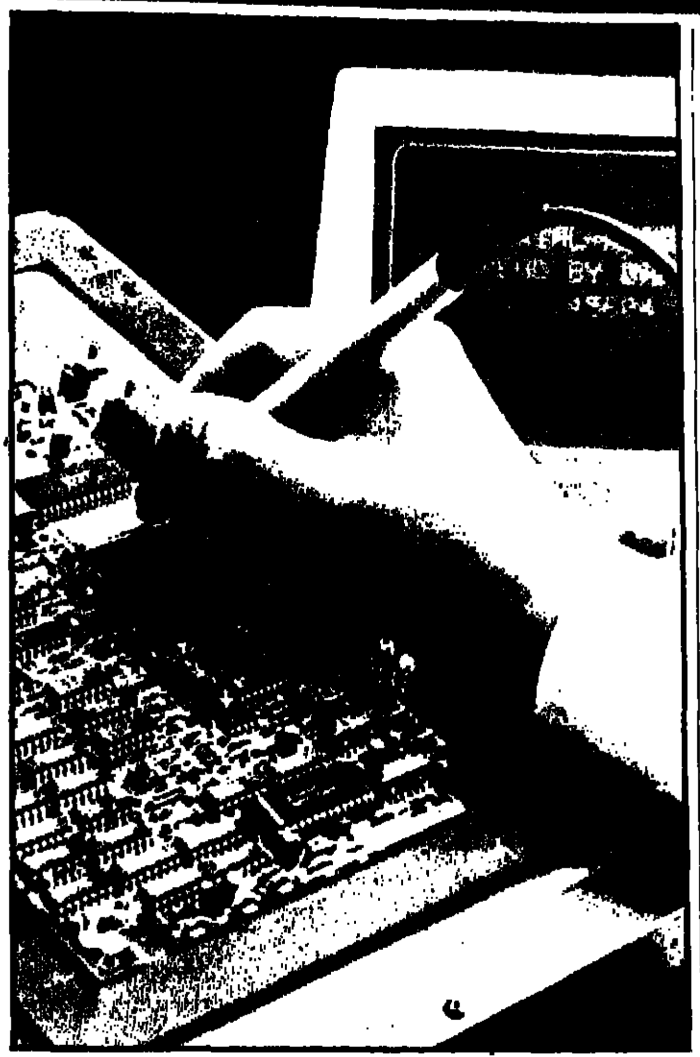
Combined features

A GRAPHICS terminal for Digital Equipment users which combines DEC VT100 facilities and Tektronix 4010 features has been introduced by the UK manufacturer Lynwood Scientific Developments. The product is based on Lynwood's Alpha Graphic terminal.

Lynwood points out that DEC users normally have to install a Tektronix display to get graphics or put an extra board in an existing DEC terminal to emulate the 4010 software.

The Lynwood product combines the features as a range of software options.

Lynwood Scientific Developments (CW), Caker Stream Road, Mill Lane, Alton, Hamp[illegible] Tel: (0420) 84888.



The Intermec Model 9300 bar code reader.

Preferred reader named by Membrain

A PREFERRED type of bar code reader for use with the company's MB3300S series of ATE has been specified by Membrain.

The bar code reader, integrated with the test system, allows fast error-free entry of data such as board type and serial number, and can call and control test programs, says Membrain. It simplifies test system operation and improves the confidence and integrity of data logging and test result analysis.

Another application for bar code readers is the introduction of a "paperless" computer-documented PCB repair loop. Before a board is tested, its serial and batch numbers are read from the board label and input to the log file. The board is then tested, and faults are listed in the log file.

At the repair station, the serial/batch numbers are again read from the board label. The datalogging facility then retrieves the fault information for the board, and presents it to the repair operator.

The bar code reader specified by Membrain is the Intermec Model 9300, which can attach a variety of reading wands, and use up to eight different bar code types to best suit the user's needs.

Membrain (CW), Ferndown Industrial Estate, Wimborne, Dorset. Telephone (0202) 893535.

Graphics controller

INTEL'S graphics controller is now available in the UK from Marconi Electronic Devices. The Intel iSBX 275 video graphics controller enables users to add a black-and-white or colour display facility to an existing system "with minimum cost and effort".

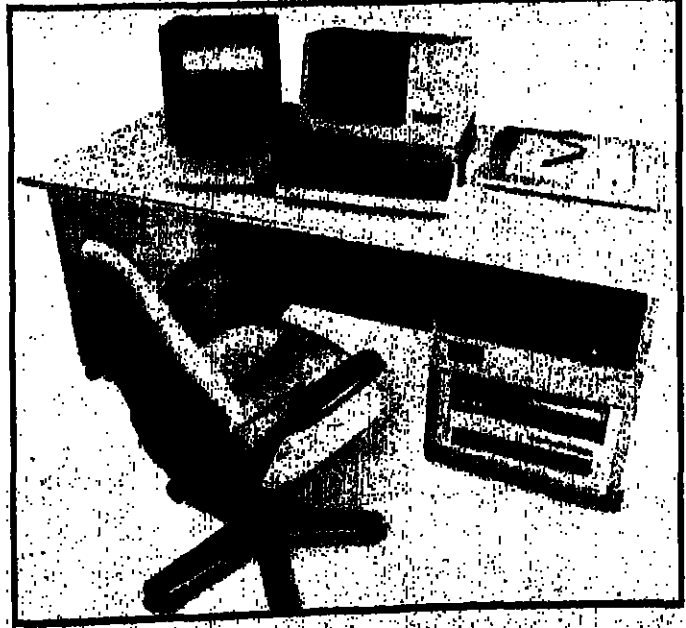
The device is supplied as a board measuring three inches by seven.

It provides a self-contained bit-mapped graphics subsystem for a 512x512 black-and-white display or a 256x256 eight-colour unit.

Drawing commands cover lines, arcs, circles, rectangles, characters, area filling and scrolling. The controller also includes an interface for light pens.

Marconi says the relatively low cost and simple installation of the controller makes it possible to introduce graphics to applications such as viewdata, business information display and industrial operator stations.

Marconi Electronic Devices Distribution (CW), East Lane, Wembley, Middlesex HA9 7PP. Tel: (01) 904 9303.



The Model 75 image processor.

Getting value from business programs

LAUNCH of a range of business and instructional programs designed for Commodore home computers is announced by Marketing Micro Software.

The business program PractiCalc is a professional spreadsheet for Commodore 64 and Vic-20 users. With a clear on-screen appearance and four-colour display, it performs over 20 mathematical calculations as well as row and column operations. It could, for example, calculate the best value for money from a range of different insurance policies where many factors need to be evaluated simultaneously.

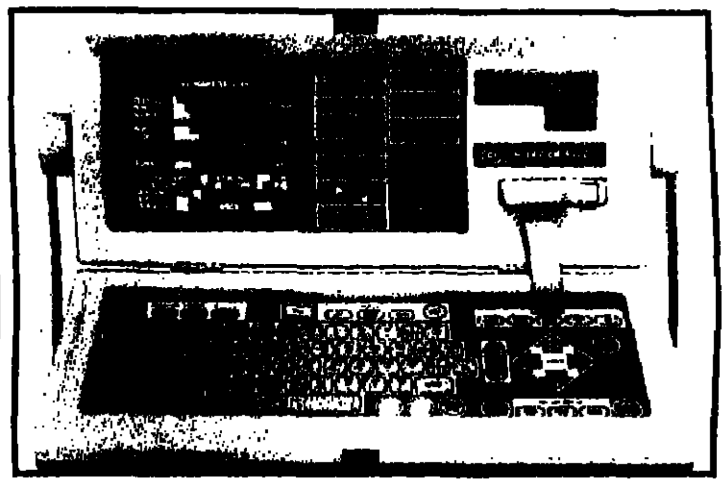
Functions not usually possible on a spreadsheet within PractiCalc's price range include fast seek and search, for either individual areas or throughout the spreadsheet; sort, both alphabetically and numerically, either from lowest to highest or vice versa; and a graphics facility.

"For the first time, spreadsheet software had caught up with recent developments in hardware," said Richard Sumner, sales director at Marketing Micro Software. "PractiCalc will run on a Vic-20 with only 16K, yet this easy-to-use package offers virtually as much in everyday problem solving ability as programs costing three times as much".

Written in a combination of machine code and Basic to accelerate entry and display, PractiCalc is available on disc or cassette, priced at £29.95 and £24.95 respectively.

A new instructional software package for the Commodore Vic-20 is the menu starter program Vic Pak. It contains Mortgage, a program that finds the unknown quantity for the deposit, monthly payment, total and annual interest of a mortgage loan; Elements, a quiz on the chemical elements; Statistics, an introduction to the computer as a sophisticated calculator; Calendar, producing selected dates from 0 BC to 9999 AD, and Murblestat, illustrating the computer's ability to calculate probabilities and change.

Marketing Micro Software (CW), Goddard Road, Whitehouse Industrial Estate, Ipswich, Suffolk. Telephone: 0473-462721.



The Interview DDCMP emultir/monitor.

Automatic monitoring

THE Interview DDCMP (Digital Data Communicatkons Message Protocol) emulator/monitor from Interlekt Electronics is claimed to provide automatic monitoring of the DDCMP protocol trace, control information decode and emulation capabilities at the link level of Digital's DECnet.

Special trigger conditions are provided for DDCMP monitoring and emulation. Checks for good or bad headers, or data segment block checks, are made independently. While in emulating mode, checks are made for outstanding messages or message numbers received not equal to the expected message.

The facilities on the emulator/monitor permit searches to be made through captured data, with automatic location and decoding message headers. This search can be one message at a time while viewing data, or the Interview can display a protocol trace of only the control information in an easy-to-read tabular format.

This facility enables the user to investigate the data being transmitted on the communication circuit without the necessity to analyse all the data.

Interlekt Electronics (CW), Reacis House, Portman Road Reading RG3 1LU. Telephone: (0734) 589551.

Image processor extended

THE I²S Model 75 image processor has capabilities of the existing Model 70 applications but with hardware and software features that offer better performance in these areas and allow applications to be extended into robotic vision and industrial automation.

The Model 75 can be hosted on a wide range of computers including DEC, HP and DG Nova/Eclipse. Connection is by interface installed in the host system and I²S System 575 software is available to run under the appropriate operating system. Alternatively, the Model 75 can be used as a standalone utilising the optional built-in LSI 11/23 microcomputer.

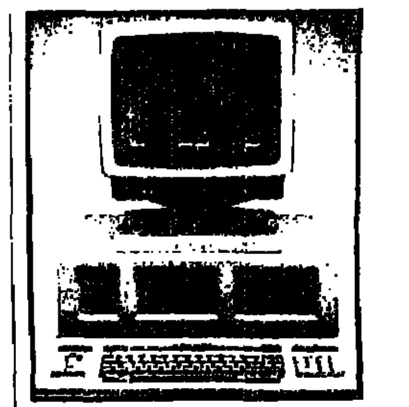
The Model 75 processor has been designed to give the user real time multi-spectral or multi-temporal analysis capability in a compact package offering ease of integration into consoles and workstations.

The 64K dynamic RAMs used for refresh memory significantly reduce the number of printed circuit boards required. Only eight boards are needed to store 16 512 x 512 x 8-bit images. In addition, image analysis functions have been significantly simplified and improved. Independent scroll and zoom on each board operate in each dimension and expanded wraparound capabilities on each board facilitate split screen and roam over image areas as large as 2048x2048.

The front end of the image processor has been redesigned. Spatial transformations are simplified and speeded up and memory requirements are reduced as against conventional systems through the use of Parametric Memory Addressing. This permits functions such as data-re-organisation, sub-sampling, random addressing, window mode transfer and vector generation to be performed much more rapidly. A special repeated feature allows graphic outlines to be generated simply saving a considerable overhead on communication with the host.

The RGB look-up tables (separate for each image memory) are 10 bit in, 12 bit out and each table contains four separate transforms which are selected by region of interest marks. Any two of the pipelines can be fed back simultaneously; any two can be combined in the ALU during interactive or recursive processing.

Elex Systems (CW), John Scott House, Market Street, Bracknell, Berks. Tel.: (0344) 52929.



Poppy, the 16-bit personal system from Durango.

Poppy is aimed at business users

DURANGO Systems, has introduced to the UK a line of 16-bit personal business systems. Named Poppy, the new offerings are designed to meet business user requirements for one to 12 workstations in a multi-user, multi-tasking environment.

Existing Durango users will be able to upgrade their integrated desk-top systems to the 16-bit microprocessor technology through a field upgrade package, which includes a board replacement.

The Poppy line is aimed at the small business and professional applications areas, where personal computers are not adequate for the needs of a growing business.

No software expertise is expected from the users, and Durango intends to provide the support necessary to implement applications.

The modular design of Poppy allows flexibility in the choice and use of peripherals and add-ons, while also adapting to operator preferences in how the system is configured.

The choice of operating systems includes MS-DOS, CP/M86, MP/M-86, and Xenix.

Durango's own business-oriented language, Star Basic, will operate under either Xenix or MS/DOS.

Poppy customers will have immediate access to generic and application software developed by Durango, as well as software developed for the majority of current personal computers.

A basic Poppy consisting of a 16-bit microprocessor with 128 Kbytes of RAM memory, two 800 Kbyte 5¼in floppy disc drives (96 tracks per inch, IBM compatible), 14in CRT screen, detachable slimline keyboard, and the MS/DOS operating system, is priced in the US at $4,395.

The addition to the basic system of 10 Mbytes of hard disc brings the total to $5,995.

Durango Systems, (CW), 3003 First Street, San Jose, CA 95134. Telephone: (408) 946-5000.

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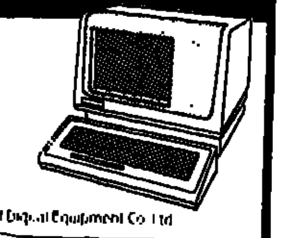

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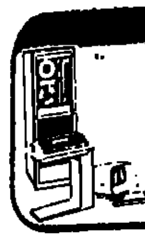

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GREY IMPORTS

Microcomputerland was wound up with £200,000 debts after jumping the IBM Personal gun. . . Steve Harris reports

Why police are probing firm that beat the PC deadline

MUDIE . . . "The trouble was the issued share capital was only £2".

ONE year ago, Scotland Yard raided the premises of Microcomputerland, a self-appointed distributor of the IBM Personal Computer. At the time, the IBM PC was not officially available in any country outside the US, despite widespread demand for it.

The result was a proliferation of "grey imports" of the machine offered by companies like Microcomputerland.

Such companies did not get their supplies directly from IBM, but through a chain of middlemen and, in most cases, machines were bought over the retail counter in the US to be resold here at a much higher price after transportation, import duties and profit margins had been taken into account.

Such deals were often financed by factoring companies, some of which turned out to be unwitting partners in questionable transactions.

One such company, Distributed Systems Limited, DSL, called in Scotland Yard when the troubled software house Microcomputerland failed to repay a large sum which it allegedly borrowed from DSL as part of a factoring deal.

In July of last year Microcomputerland was voluntarily wound up leaving debts of £200,000. The company is still being investigated by Scotland Yard and a report is currently with the Director of Public Prosecutions.

DSL, a London contract computer company, has refused to comment on the affair and its director, Michael O'Shea, has instructed his employees to stay tight-lipped.

But former Microcomputerland employee Norman Park, a director at Microcomputersource until it went into receivership recently, says DSL loaned "a large sum of money" to Microcomputerland.

"DSL loaned us the money on the understanding that two weeks later it would be paid back," said Park. He refused to say how much was owed to DSL by Microcomputerland.

Doug Mudie, Microcomputerland ex-sales director, says a number of attempts were made to set up a full scale factoring deal with DSL. But when DSL realised that its loan would not be repaid on time it started an action in the civil court.

Before the case could be heard, however, Microcomputerland had called in the receiver.

In the meantime, DSL had reported the matter to Richmond CID, where Microcomputerland was based. The CID referred the complaint to Scotland Yard and in May of last year the company was raided. Members of staff were questioned and shortly afterwards a number of salesmen were fired by MD Mick Punter.

In July of last year Microcomputerland appointed Bill Roberts of accountants Ernst and Whinney to wind up the company. Although Roberts would not comment on the details of the winding up, he confirmed that Microcomputerland owed creditors about £200,000 and that DSL claimed to be a creditor.

Another company awaiting the outcome of Scotland Yard's investigations is shipping agent Airspeed. It transported IBM machines from the US on a cash-on-delivery basis for Microcomputerland.

"Microcomputerland went out of business owing us an awful lot of money," said Airspeed director John Weller. "The arrangement we had with them was cash on delivery payment, so the goods were not released by us until they were paid for."

Airspeed has since sold off IBM Personal Computers belonging to Microcomputerland to companies including Doug Mudie's Microland and Norman Park's Microcomputersource.

THE IBM PERSONAL COM

PUNTER . . . Fired a number of salesmen.

"I bought two machines from Airspeed," said Park. "They (Airspeed) finished up with machines which Microcomputerland couldn't pay for and we bought them up.

"That is where Mudie bought his machines from. He was buying them from Airspeed at a ridiculously high price. They could have been bought in the US much cheaper.

"I had a shipment coming over from the US which had not yet arrived and I did not want to let my customer down so I bought machines from Airspeed," said Park.

Mudie claims that Microcomputerland sold off assets, including IBM Personal Computers, to Park's Microcomputersource. "Microcomputersource bought an awful lot of stock from Microcomputerland," said Mudie. "Microcomputerland folded with debts of about £200,000. It is difficult to see how that amount of money can be lost by a company with a staff of 22," he added.

Park denies buying machines from Microcomputerland and claims that his company did not exist when Microcomputerland was wound up. Records at Companies House, however, show that Microcomputerland was wound up on July 5, 1982, and that Microcomputersource was incorporated on April 16, 1982 – two-and-a-half months earlier.

director and secretary of Microcomputersource on May 17, 1982 – the same day that Microcomputerland's managing director, Mick Punter, resigned as a director and chairman of Microcomputersource – positions he had taken up two-and-a-half months before the voluntary winding up of Microcomputerland.

Microcomputersource has itself called in the receivers recently with the directors blaming delays in the granting of US export licences for the transportation of IBM Personal Computers from the US to Britain as one of the main reasons for the company's downfall. Customer orders were held up in the US and eventually Microcomputersource lost orders worth £12,000 through late deliveries and another £12,000 because of the need to obtain temporary import licences to sell the IBM machines.

Microcomputerland was the first UK company to announce it had circumvented IBM restrictions on exports of the Personal Computer from the US. It bought the machines from Computerland shops in America through a buying agent, says Mudie.

"IBM was quoting six months delivery to US customers but you could get them straight away from Computerland shops," Mudie explained. "When I was at Microcomputerland we bought 10 machines a week; over a five-month period we received some 200 machines. We were buying them for £1,500 and selling them for £2,900. With that kind of profit margin it's virtually impossible to lose £200,000.

"The only reason Microcomputerland was in trouble was that the issued share capital was only £2. It should have been about £100,000, but Punter did not up the money," said Mudie.

Microcomputerland had discussions with the Industrial and Commercial Finance Corporation about receiving a capital injection, but no offer was made by ICFC.

"We made a proposal to the Industrial and Commercial Finance Corporation but Punter did not come up with the £11,000 required," said Mudie. "We also had a package deal involving investment from Banque Occidentale among others. The total package was worth £500,000 but it all fell through."

Microcomputerland was set up by Mudie and Punter in December 1981. Punter had been managing director of the Zeus Hermes Investments software house and was involved in selling off the main subsidiaries of that group to the Enterprise Systems Group based at Thames Ditton, Surrey.

Mudie and Punter fell out when Mudie was fired. "Punter was not happy with my sales performance," said Mudie, "but there was no defect in my handling of the

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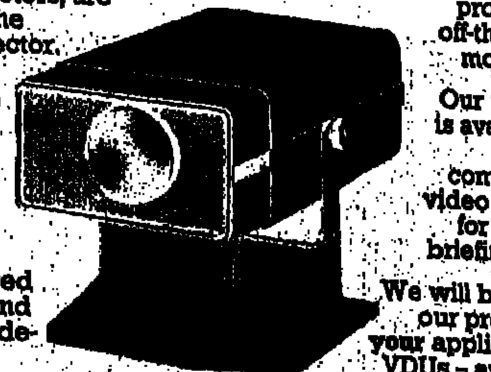

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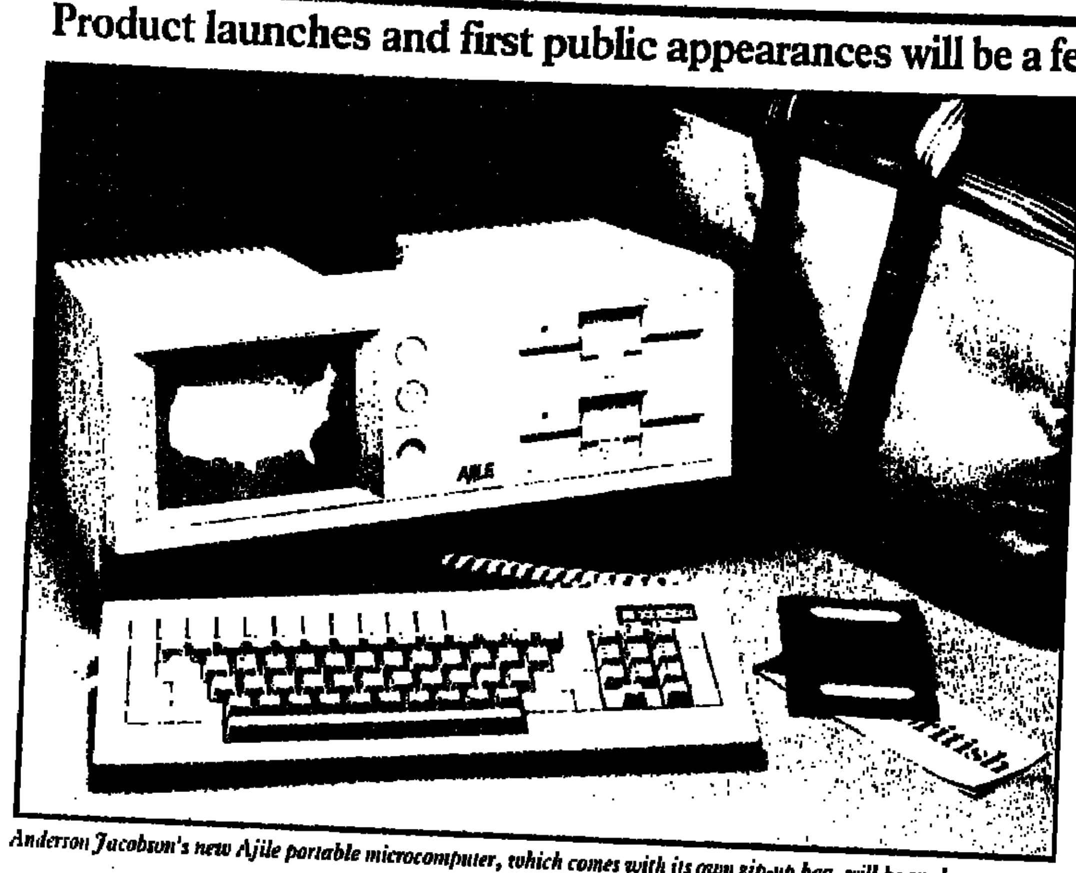
COMPEC NORTH PREVIEW

Product launches and first public appearances will be a feature of next week's exhibition . . . John Kavanagh reports



Anderson Jacobson's new Ajile portable microcomputer, which comes with its own zip-up bag, will be on show.

The new Pixy III graphics plotter will feature on the Mannesmann Tally stand.

The show goes out to the people . . .

COMPEC NORTH was the first regional spin-off from the UK's biggest professional computing exhibition. And in this third year of Compec North it is clear exhibitors feel that the idea of taking the show to the people is working.

There is the usual mix of local firms and national companies with local offices. But this year sees some significant newcomers, many of them regulars at the national Compec in London in November but only now joining a regional show.

"Big London shows like Compec attract people from all over the UK and beyond," said Compec manager Tony Kynaston. "But many business people don't feel they can afford the time and cost of two or three days in London for an exhibition. So instead of them coming to the show, we take the show to them.

"Leading national firms recognise the benefits of the regional Compecs, too. Companies like Digital Equipment never miss the main Compec – but this year DEC has also come to Compec Scotland and Compec North."

The importance of the regional shows is also shown by the number of product launches and first public appearances of products at Compec North.

One total newcomer to Compec, NCR, could also turn out to be one of the stars of the show. The company's Manchester branch is making the first big public showing of the new 9300, said to be the world's first full 32-bit very large scale integration mainframe for business applications.

The 9300 uses NCR's own 32-bit chips, launched last autumn. As a VLSI computer it is just 7.5 inches high and 17.5 inches wide, so it can sit on a desk or hang on the wall and needs no special air conditioning.

The 9300 is compatible with NCR's I range of computers. It is seen as a system for businesses and as a distributed processor – and its compatibility with IBM's SNA network architecture makes it interesting to a big section of the computing community.

At the other end of the scale **Anderson Jacobson's** new Business Computer Division is giving the first public demonstration of its IBM-compatible Ajile microcomputer.

The Ajile is a portable business system – it comes with its own zip-up bag – with a seven-inch screen and two floppy discs with 320 Kbytes of storage each. It is based on the Intel 8088 processor and has 256K of memory.

Anderson Jacobson claims it is the most powerful portable business microcomputer in the UK. Four software packages covering text processing, financial modelling, Basic and communications are included in the price of £3,595.

Corporate Modelling Consultants is using the show to announce the opening of its northern office in York. The company specialises in financial modelling systems, notably the Finar package on eight-bit and 16-bit microcomputers and DEC minicomputers and mainframes. Finar is offered on a 30-day money-back trial basis.

The company can supply turnkey systems including Finar on a Sirius computer, plus training, updates and support at £3,345.

Micropute, with an office in Macclesfield, will launch a multi-user business package based on new software and the Shelton Signet microcomputer. The company is a distributor for the UK-built multi-user machine, and for daisywheel and matrix printers from the Japanese manufacturers Ricoh and Oki.

A 10-megabyte Winchester disc version of the Z100 microcomputer will be shown for the first time by **Zenith Data Systems**. The Z100 has both an eight-bit and a 16-bit processor, up to 960K of user memory, two 320K floppy disc drives and four circuit board slots for expansion.

A programmable robot, Zenith's Hero, will no doubt be an attraction. Hero is designed for the education market. It can sense light, sound, motion and obstacles in its path and can pick up small objects. It can be programmed to speak through a synthesiser.

Tektronix will give the first public display of its 4105 colour graphics terminal. As a low-cost product selling at just under £3,000 it is aimed at all applications, from scientific data analysis to process control and business graphics. Tektronix will demonstrate the 4105 with its A4 colour printer, the 4695, costing £1,750.

The UK terminal manufacturer **Data Type** is presenting its new Metheus Omega 400 graphics terminal. This high-performance terminal is aimed at the computer-aided design and manufacturing markets; it has a drawing speed of over a million picture elements a second and a resolution of 1,024 elements by 1,024. It has a pallet of 16.7 million colours and can display 256 of them at a time. Options include input through graphics tablets.

Compec North will also see Data Type's northern launch of eight-bit and 16-bit microcomputers from Televideo.

Compec North is at Belle Vue, Manchester, from June 21 to 23. It is open from 10am to 6pm on Tuesday and Wednesday and from 10am to 4.30pm on the Thursday.

The System 32:16 which Fortune Systems will feature, runs a superset of a popular word processing system. It offers the standard text editing facilities, with Maths, Record Management and linkage to graphics and Unix utilities.

Two exhibition firsts come from data communications specialist **Master Systems**, a regular at the main Compec and all the regional shows. The company is showing for the first time in the North of England a new lower-cost version of its Masternet integrated office system.

Master Systems' new Micronode, launched last month, provides electronic filing, electronic mail, computing as a microcomputer or as a terminal to a larger machine, word processing and links to the telex and Prestel viewdata services. The system, based on the Xibus, acts as a workstation cluster controller with its own data storage. As such it can work on its own or as part of a wider network.

Master Systems says that at a starting price of £4,000 the Micronode can provide the basis for a pilot office automation scheme in a big company or form the heart of a complete system in a smaller firm.

Master Systems' other new product is the Linemaster, which combines voice and data traffic on the same line, thus removing the need for cabling whenever an extra device is installed.

Timeplex is another Compec regular and it, too, has saved new products for Compec North. Its Wideband Microplexer is for wideband digital links such as British Telecom's Kilostream service. It can handle speeds of 460.8 kilobits a second.

Access to BT's Packet Switchstream service is provided by the new Timeplex Microplexer X25 packet assembler and disassembler. And the Aimpac Bandsplitter multiplexes synchronous data by allocating bandwidth to active channels only.

New printers include the Lasergrafix 1200 page printer, launched last month by **Pragma**. This laser-beam printer runs at 12 pages a minute and provides characters of variable width and founts, while OCR characters, bar codes, signatures and graphics such as company logos can be generated from simple commands. A wide range of standard interfaces is available for linking the printer to microcomputers and minicomputers, while optional interfaces can make it emulate IBM, NCR and Burroughs printers.

Graham Wright Computers of Derby is marking it first Compec appearance by unveiling the Gardena GMD 110A printer, which features an automatic guillotine. It can cut to any size. The unit runs at 120 characters a second or at [illegible] characters for near correspondence quality. Graham Wright also distributes Facit and Oki printers and a £385 display terminal with editing and emulation of products from Hazeltine, Lear Siegler and ADDS.

New 80- and 132-column matrix printers from Oki are added to **Intac Data Systems'** range of microcomputer printers from the likes of Epson, Silver Reed and Ricoh.

Datac will release the 1090 80-column printer. It has addressable pins in its matrix head for detailed graphics printing. The 1090 is Datac's own product. It lines up with terminals and printers, some with colour printing, from Facit, Centronics, Mullard and National Panasonic.

Mannesmann Tally Direct, a new division of printer manufacturer Mannesmann Tally, will introduce itself to dealers in the North at the show. The division has been formed to provide service and support to microcomputer dealers and shops. Products on offer from Direct and its parent on a separate stand include printers running at 160 characters a second and providing drafting or correspondence quality, plus a three-pen plotter.

Benson is also featuring plotters, notably its recently-launched 1565. It includes a display terminal for the operator and can handle up to A0-size paper.

Among the big-name regulars at the main Compec but newcomers to the regional shows, DEC is featuring its Rainbow, Professional and Decmate personal computers. **Olivetti** is showing its 16-bit M40 and M20 microcomputers and the SP600 process control system, while **Philips** pushes its P3500 multi-user business system for small and medium-sized firms.

Also there are Ericsson, CASE, **Newbury Data Recording, GEC Computers, Perkin-Elmer, Zygal Dynamics, Willis Computer Supplies** and **CACI** to provide the traditional Compec mix of communications equipment, terminals, minicomputer and microcomputers, supplies and software, from local and national companies.

Move North – and halt the exodus of skills from dying factories

David Casey looks at some of the efforts to counter mounting unemployment

Gone are those dark satanic mills . . . . and the jobs too.

TO the desk-bound Londoner, the North starts at Watford. Beyond the borders of Betjeman's Metroland tower the shipyard cranes, the blastfurnaces chimneys and the Gothic architecture of heavy manufacturing.

At least, that was the case until orders for merchant shipping declined and the flow of steel was stemmed.

Seen from the other side of the "border" – up in Manchester or Hartlepool – the mounting unemployment has a grim reality. The problem facing the former industrial capitals of the North has been recognised by successive governments, however. Under Whitehall's regional assistance policy, development areas were designated where conditions appeared most acute.

Many of these "intensive care units" have long since been upgraded to special development area status, offering 22% capital grants and comparable incentives for job creation.

During the 1960s and 70s, these measures seemed to be counteracting the structural decline in the region's economy, and justified the expensive development area programme. This support has continued virtually unaffected by the redrawing of regional aid boundaries in 1979.

In the past five years it has been the turn of the factories to close. Mechanical engineering firms were casualties first, the malaise spreading insidiously to the heavy electrical sector.

The immediate job loss is critical: there is little prospect for a man of 50 to find stable employment.

Even more severe is the effect that the recession has had on the skills within the area. Men with a lifetime's technical experience are leaving the North, attracted by brighter prospects of a future in the Midlands and South-east.

Not all have benefited by the move: steelworkers settling in Corby were to experience their second upheaval in a decade when the BSC withdrew.

Stemming this outward flow of skills is now the prime objective of any economic strategy for the North. This will only be achieved if successful companies can be persuaded to relocate there.

At first sight, the expertise of a redundant shipyard worker might seem of little relevance to the high technology manufacturer. But an industry as embracing as shipbuilding employed a spectrum of professions, including electronics and control engineers, and a full complement of mechanical designers.

Equally important for the regeneration of industry in the region the decline of the yards released a wealth of management experience.

The North-east was a natural choice for a clutch of enterprise zones when the concept was outlined in Sir Geoffrey Howe's 1980 Budget. The benefits available in an enterprise zone are primarily ten years' freedom from rates, and minimal planning requirements. They are independent of any other incentives which apply in the area.

A 270-acre zone in Hartlepool, for example, is within a special development area. The total package of aid would therefore include the maximum grants of 100% capital allowances. As an inducement to create employment, grants of up to £8,000 per job are available for projects in office and service industries.

Management considering expansion in a UK assisted area are faced with an overwhelming array of incentives. There are steel closure schemes in South Wales, Corby and parts of the North-east, for example, with special concessions on offer in Ulster.

The packages may differ from area to area, but the net effect is broadly the same. Companies planning a move to an assisted area could be forgiven if they stuck a pin in the map.

Opto-electronics manufacturer Isocom took a more rational view when it opted for the Hartlepool enterprise zone as the site for a new factory. The company's technical director, Andrew Mann, has moved from the US to start operations.

He justified what might at first seem an unlikely choice. "There was a well-trained workforce on our doorstep – 1,200 had just been made redundant by GEC. Once we have the people we want, they can be trained without the worry that we might lose them. In our type of business, the aim is for long-term continuity for five to ten years".

Mann compared the situation in Hartlepool with his previous experience in California. "With the shortage of manpower over there, we would stand the risk of a competitor hiring our staff for a few cents more after we had invested heavily in their training. Here in the North-east, there is a degree of protection – there is nobody else around to take them".

Isocom's new premises are being built to their specification and will be made available on an initial eight-year lease.

It was during the negotiations that Mann appreciated the problems which could be faced by high technology companies. "It takes a while to educate both sides in the deal: we took it for granted that they would understand our requirements. The authorities are more used to dealing with heavy industry."

It took Isocom a year to find the right location for the factory, which will employ up to 100 people when it opens early in 1984.

Were Mann and his board influenced by the enterprise zone status of Hartlepool? "That was a key factor. As a start-up company, we were looking for ways of getting help. The rent is low, and there are no rates in the early years."

If communications within the UK had been the critical factor, an enterprise zone in Greater Manchester or Merseyside might have been more attractive to Isocom. A location at the crossroads of Britain's North-South and East-West routes is perhaps Salford's greatest asset as an enterprise zone. Perched incongruously on the edge of Manchester, the city once had an economy based on shipping and the import of raw materials for processing.

The site that was left when rows of "Coronation Street" terraces were cleared appealed to one firm with extensive experience in assisted areas. Terminal manufacturer Data Type has set up a sales and service branch in Salford within the past two months. Three years ago, the company opened a factory in Cwmbran, one of the South Wales development areas. It outgrew its original accommodation, and has now taken up larger premises on another site provided by the development authority.

Alan Richardson, the UK sales manager, explained the reason for the new development at Salford. "We wanted a sales office to complement Cwmbran and the London branch in Wembley. The site we chose is a stone's throw away from a first class network of motorways, making it ideal for the staff there to serve the whole of the North region."

Apart from administrative delays in completing the agreement, setting up less than two months ago posed no major problems. Despite high levels of unemployment, however, there were few staff available with wholly relevant sales or technical experience.

Data Type has now recruited the people it needs, but companies in a similar area of technology would be advised to check skills availability with particular care before entering negotiations for regional support.

Financial assistance is the major stimulus for many manufacturers prepared to invest in the North. But there are other benefits. Under the Contract Preference Scheme, firms in the assisted areas are given every opportunity to tender for public sector contracts.

> **The hostile attitude faced by the county's microprocessor development officer when first appointed three years ago is only now beginning to soften; the influence, perhaps of IT Year**

Where all other considerations are equal, government departments, nationalised industries and other public bodies will opt for one of these companies.

Despite this impressive portfolio of incentives, Merseyside County Council has an uphill struggle to attract companies to its area. Centred on the old city of Liverpool, the county takes in the equally depressed townships of Birkenhead, Kirby and Speke.

Trying for the past three years to wave the flag for advanced technology on Merseyside has been Dr Russ Aubusson, the county's microprocessor development officer. His role is to stimulate interest in micro systems – as much to stem the steady decline in local industry as to generate new enterprise. The hostile attitude that he faced when first appointed three years ago is only now beginning to soften; the influence, perhaps, of IT Year.

An essential part of Aubusson's task is to help high technology projects through the critical phase from development into production. His work brings him into close contact with the academic community.

From his unique standpoint, Aubusson is promoting Merseyside as a technological resource. "We are concentrating on setting the right requirements for success in high technology ventures, and trying to integrate the industrial and academic sectors."

COMPEC NORTH'83

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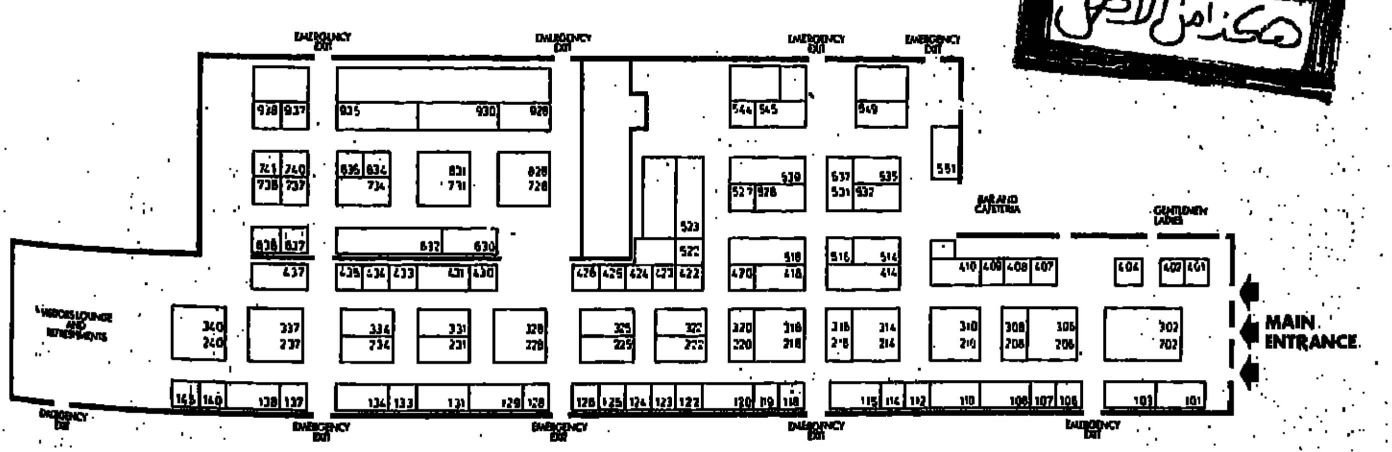

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Mervyn Pragnell looks at natural language processing

A whole new approach to computer logic

"Our cat is purring" – but only if there is a cat.

MANY attempts have been, and are being made, to incorporate some natural language facilities into computing systems. This attempt is one of the facets of the Japanese programme to develop the so-called fifth generation machine*.

However, if the fifth generation machine is ever to become viable it is quite useless to persist with classical logic as an integral part of the system. The necessary logical sophistication for dealing with natural language processing is completely missing from Boolean algebra and its various classical extensions.

Jon Barwise and John Perry of Stanford University have created a completely new approach to many problems of natural language semantics and inferences.

A book, soon to be published by Massachusetts Institute of Technology (next month in the UK) called *Situations and Attitudes* (approx. £13) will present a great many of the technical details and will obviously give a more detailed story than I can here. The title of the book should not mislead you into thinking the contents are of no consequence to the computer world.

We can state at once that traditional Boolean algebra, much beloved by computer engineers and some programmers, receives a severe mauling. Hardly any of it remains.

They see at the root of many problems the tendency of mathematicians to overlook the extremely efficient nature of ordinary language

It is replaced by something much better.

How could this possibly be? Let's begin by looking closely at two concepts of denial. We have first the ordinary Boolean denial. This is quite often denoted by placing a bar over a letter, or literal, to denote the denial of the value that has been given. We know that this operation gives the value 1 if the literal has the value 0 and vice-versa.

For example, we are in a situation, say, where we are aware that our cat is purring. We can abbreviate "Our cat is purring" by A, we would deny A by $\bar{A}$. This states that our cat is not purring.

Suppose, however, that there is no cat. In this case, it does not make much sense to assign a truth value of either 0 or 1 to the statement "Our cat is purring," since we have moved out of bounds of the original situation.

It is possible to make the all-inclusive statement "It is false that our cat is purring."

"Our cat is not purring" does not follow automatically from this statement, since there may not be a cat.

We can say that "Our cat is not purring" belongs to a sub-collection of the set of situations described by "It is false that our cat is purring."

This brings us to the notion of entailment. We can say that a statement S1 strongly entails a statement S2 if all situations that support the truth of S1 also support of S2. In our example, we might well find that all situations that support "Our cat is not purring" will also support the larger statement "It is false that our cat is purring."

Barwise and Perry develop this notion of entailment for situations which are not clear cut, but where different strands of evidence need to be considered.

Quite clearly many Boolean laws, depending as they do on situations being either true or false, will vanish.

Barwise and Perry also discuss a new way for computers to analyse sentences. Their approach is to take the meaning of a sentence in isolation, and then assign a numerical value to the meaning according to related knowledge contained, perhaps, in a computer database.

To use an example from Barwise and Perry, I can say "My dog is this colour" pointing to a brown tile on the floor, and you can say "My dog is this colour," pointing to a grey tile. Both sentences are identical, so they must have the same meaning in isolation, but they have different interpretations. The dogs referred to are different.

Barwise and Perry would use acquired knowledge of the colour of the tiles pointed to, and give values to the two sentences accordingly. The first might have the value 1, and the other 2.

By contrast we can have two sentences with exactly the same interpretation, but a different meaning. For example I might say "I am sitting" and then stand up. My friend could then say "You were sitting." Both sentences have the same final interpretation, but a different meaning in isolation.

An important distinction is also made in the book between the information carried directly by the meaning of an utterance, and the information carried (loosely speaking) by the context.

For computer people the message is clear: Barwise and Perry believe that much of modern logic may be entirely appropriate for the analysis of the foundations of mathematics, but is relatively useless when used to formalise or clarify inference stated in ordinary language.

They see at the root of many problems the tendency of mathematicians to overlook the extremely efficient nature of ordinary language. We alluded above to the ability of ordinary language to recycle the same sentences with different interpretations. This is quite unlike what is usually encountered in mathematics. The formulae of mathematics are used over and over again with the same interpretations.

In addition to the efficiency of ordinary languages we have the relativity of ordinary language. Different expressions with different meanings can be used in different circumstances with a single interpretation.

Robotics can also expect to benefit because of the work Barwise and Perry have done on the logic of perceptual reports. Consider, for example, the distinction between:

1. I saw John leave his car at the police station; and
2. I saw that John left his car at the police station.

With regard to the first sentence you could add a rider, such as, "but thought it was Joe." It is clearly impossible to do this with 2.

It may well be that instrumentation of complicated situations would benefit by the exploitation of situation semantics. After all, instruments are meant to provide information about situations. Instrumentation backed up by powerful inferential procedures might save many a 3-mile island situation from developing.

I believe I have written enough for computer people to see that a completely different approach to logic now exists.

I will end this article with a quotation from *Situations and Attitudes*.

"We had become convinced that the standard view of logic derived from Frege, Bertrand Russell, Tarski and work in mathematical logic is completely inappropriate for many of the uses to which it has been put by philosophers, lo ists, computer scientists and o – full of ideas appropriate fo thematics (even there we hav doubts) but are inappropria more ordinary uses of languag"

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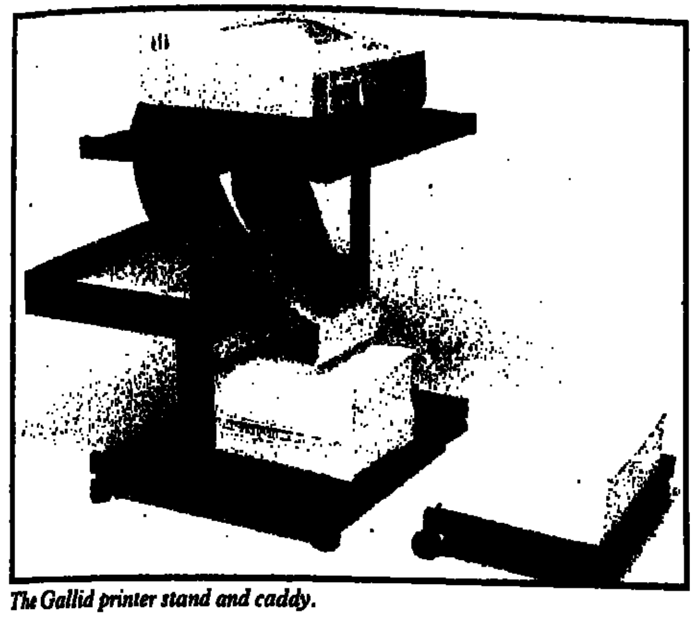
* Challenge for Knowledge Inform Processing Systems. T. Moto-oka (Proceedings of the International conf on fifth generation computer systems J Information Processing Develop Centre. October 1981.



The Gallid printer stand and caddy.

Stylish printer stand

THE Gallid printer stand has been designed to suit a wide range of dot matrix and word processing printers. It has a black ash wood grain finish which gives the stand a stylish look. Other wood grain finishes can be supplied upon request.

A reversible paper feed slot accommodates a wide range of bottom feed printers, says Gallid.

The printer stand has heavy duty castors.

For use with or without the printer stand is the Gallid printer caddy which has been designed to make light work of moving heavy listing paper.

Gallid (CW), 1 Bilton Road, Rugby, Warwickshire CV22 7AA. Tel: (0788) 74442/3.

A personal attachment from Telex

COMPUTER Peripherals (Systems) has announced a new personal computer attachment from Telex, the Profit – Professional Office Terminal.

This attached processor attaches to a Telex 278 display terminal and is designed to integrate existing Telex 3270 interactive systems with personal computer applications. Thus Telex users can now store and retrieve interactively information from a remote host computer system and process local applications concurrently.

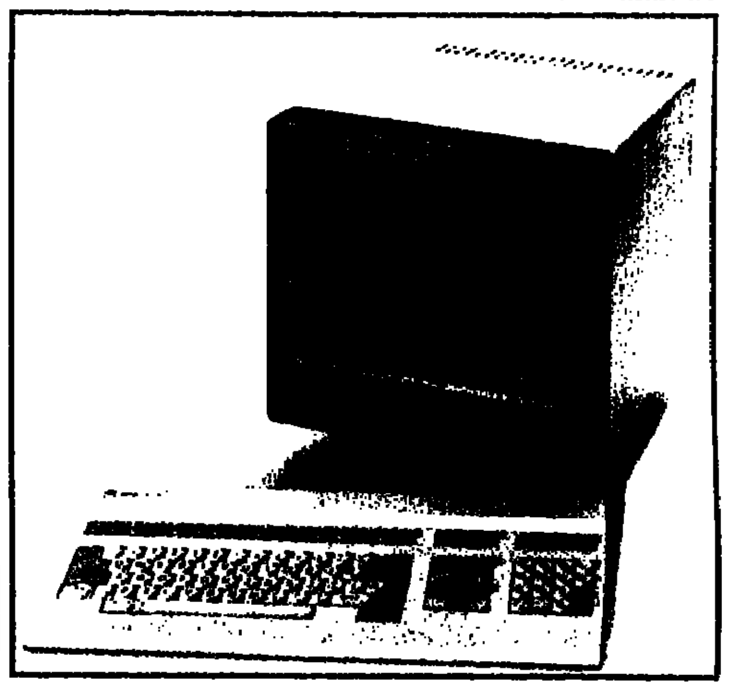
Chris Delve, sales and marketing director of CPS, explains: "A single keystroke allows the operator to switch back and forth from online 3270 processing to local functions. This dual personality feature for host and local functions allows users the most convenient method to change screen updates without time consuming and involved log on and off procedures of other systems."

Features of the Profit include an Intel 8088 16-bit microprocessor; 128K of main memory optionally expandable to 640K; two 5¼in single-sided double density diskette drives with a total of 320K storage; and a choice of matrix and daisywheel printers.

A double-sided double density diskette and a 10 Mbyte fixed Winchester type disc is planned.

Word processing and spreadsheet calculation software packages Select and Supercal are provided and supported by Telex. In addition an exclusive option the TX/SPF Editor is to be available for offloading the development of Cobol programs from remote host systems to the local attached processor system.

Chris Delve, Computer Peripherals (CW), 349 City Road, London EC1. Tel: 01-278 7837.



The Eurobee is designed for Europe.

Beehive is a honey

A DISPLAY terminal designed for the European market has been launched by Beehive International.

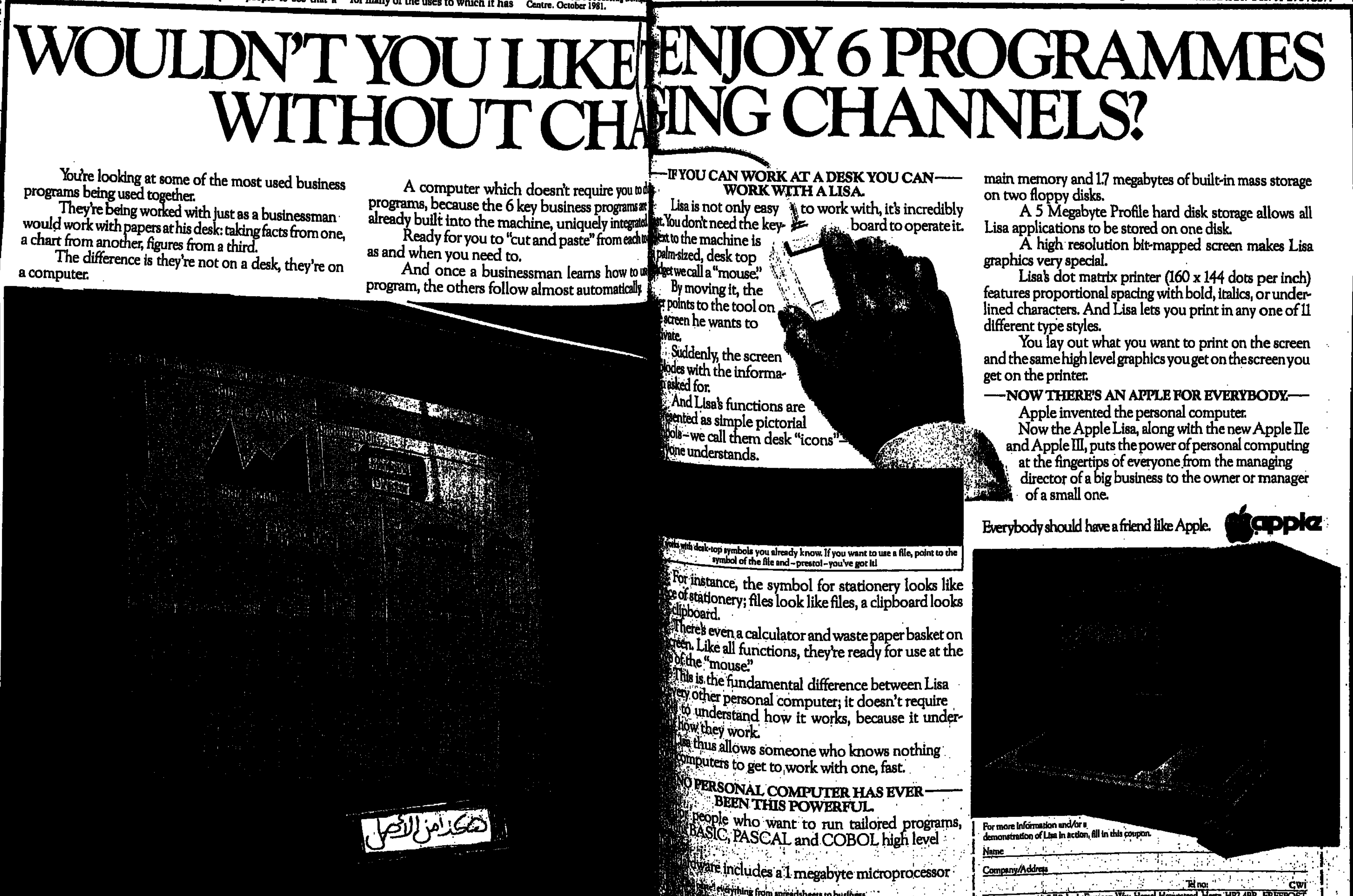
The Eurobee FT-10 uses an Intel 8085 processor and has 6K of user memory, which can be expanded to 40K. The 14-inch screen has 24 80-column lines plus a status line. It can display light characters on a dark background or vice versa. Double-height and double-width characters can be displayed.

The terminal has 107 keys, including a numeric pad and eight function keys, which can transmit 16 codes using the shift key. All European character sets, plus 161 graphics symbols and 16 bar codes, are included.

Features include editing functions, transmission rates ranging from 50 to 19,200 bits a second, an auxiliary port, an RS422 interface and synchronous communications. Emulators for Televideo, Data general, MAI, Datapoint and other terminals are available.

The price of the display terminal is $1,085.

Beehive International (CW), Index House, Ascot, Berkshire SL5 7EU. Tel: (0990) 23377.



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Lisa is not only easy to work with, it's incredibly t. You don't need the keyboard to operate it. ext to the machine is palm-sized, desk top get we call a "mouse."

By moving it, the r points to the tool on screen he wants to ivate.

Suddenly, the screen lodes with the information asked for.

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orks with desk-top symbols you already know. If you want to use a file, point to the symbol of the file and – presto! – you've got it!

For instance, the symbol for stationery looks like ce of stationery; files look like files, a clipboard looks clipboard.

There's even a calculator and waste paper basket on reen. Like all functions, they're ready for use at the of the "mouse."

This is the fundamental difference between Lisa ery other personal computer; it doesn't require to understand how it works, because it under how they work.

isa thus allows someone who knows nothing omputers to get to work with one, fast.

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A 5 Megabyte Profile hard disk storage allows all Lisa applications to be stored on one disk.

A high resolution bit-mapped screen makes Lisa graphics very special.

Lisa's dot matrix printer (160 x 144 dots per inch) features proportional spacing with bold, italics, or underlined characters. And Lisa lets you print in any one of 11 different type styles.

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Laser range introduced to the UK

DIGITAL Technology has introduced a range of laser printers to the UK. They combine precision scanning optics, a semiconductor laser and electrographic copier technology with a video generator and computer interfaces. The result is a quiet printer designed to print text, graphics and bit-map images from a host computer via industry-standard parallel or serial interfaces.

Two models comprise the basic range. The LBP11/M2 is described as offering electric typewriter quality at over 900 lines per minute with full forms drawing and shading capabilities. The LBP11/G1 is the M2 with a powerful graphics interface which will support up to 400 type fonts.

Documents may be printed in either "landscape" or "portrait" modes, selected via a simple command set which the computer user embeds into his software. Multiple copies and different type-font selection are among the other features which may be selected under user control.

Digital Technology (CW), Clark House, Kings Road, Fleet, Hants GU13 9AL. Tel: (02514) 24467.

File handling solution

ONE of APL's weaknesses – file handling – could be overcome by the AFM file management system from Cocking and Drury for IBM APL. The system is said to be completely compatible with APL running under the VS operating system and needs no changes to application programs.

It lets the user develop secure, controllable systems which give many users access to files.

The company points out that the product launch means APL can now be used to program full commercial systems.

AFM was developed by the US software company Interprocess Systems.

Cocking and Drury (CW), 16 Berkeley Street, London W1X 5AE. Tel: (01) 493 6172.

The Tektronix 4116A.

Over 15,000 characters on display

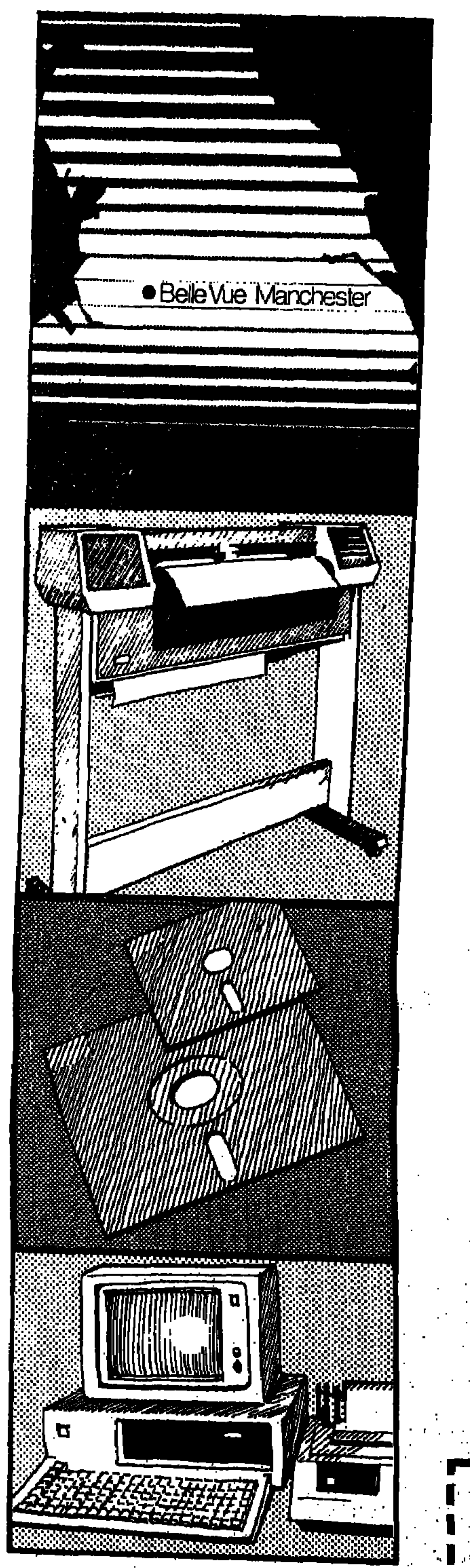
DESIGNED to provide extremely high resolution capability for complex graphics applications, Tektronix announces the introduction of the 4116A Display Terminal.

The 4116A features a 635mm (25in) Direct View Bi-Stable Storage Tube (DVST). As a direct result of its 4096×3120 viewable resolution and finely etched 10mil-wide vectors, smooth contour lines are possible in highly complex line drawing applications common to cartography and computer-aided design. In addition to high density graphics displays the 4116A provides density alphanumerics for labelling designs and maps. Over 15,000 characters may be displayed simultaneously.

Host communications are also reduced by the 4116A's high speed transmission rate of 50 to 19,000 bits per second sustained, including independently specifiable receiving and transmitting rates.

Another feature incorporated in the 4116A to enhance speed is the redraw capability.

Tektronix (CW), PO Box 69, Harpenden, Herts. AL5 4UP. Tel: (05827) 63141.



The North of England's own computer systems, peripherals and software exhibition . . .

COMPEC NORTH'83

Belle Vue, Manchester.
June 21-23, 1983.

If your company owns or is thinking of buying a computer, visit COMPEC NORTH '83, the only exhibition in the North of England for serious computer users and DP professionals.

On show will be mini- and micro-computers, small business systems, software, printers, terminals, other peripherals, telecommunications equipment and word processors. This exhibition offers you an unequalled opportunity to meet and discuss with the experts, hardware and software best suited to your company's requirements.

Opening times are: Tuesday June 21, 10am-6pm
Wednesday June 22, 10am-6pm
Thursday June 23, 10am-4.30pm

Complete the registration form, and present at the door for, FREE admission

COMPEC NORTH'83

Belle Vue, Manchester.
June 21-23, 1983.

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Value £2.00

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Company/Organisation
Address

Job Title (tick one)
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☐ 2. Directors
☐ 3. DP Management
☐ 4. Financial Management
☐ 5. General Management
☐ 6. Engineers and Designers
☐ 7. Consultants
☐ 8. Systems Analysts
☐ 9. Programmers
☐ 10. Sales and Marketing
☐ 11. Education
☐ 12. Others

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☐ 3. Public administrations
☐ 4. Professional/scientific
☐ 5. Transport/distribution
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☐ 7. Mining/Chemicals/Utilities
☐ 8. Defence/police/security
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☐ 2. Peripherals and terminals
☐ 3. Telecoms equipment
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☐ 2. ICL
☐ 3. Other
Microcomputer/small business system:
☐ 4. 8-bit CP/M
☐ 5. 8-bit other
☐ 6. 16-bit
Minicomputer:
☐ 7. Data General
☐ 8. DEC-type/Systime
☐ 9. Hewlett Packard
☐ 10. IBM
☐ 11. ICL
☐ 12. Other

I am responsible for purchasing or influencing the purchase of: (tick if applicable)
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☐ 2. Minicomputers
☐ 3. Microcomputers/small business systems
☐ 4. Office systems
☐ 5. Peripherals and terminals
☐ 6. Systems software
☐ 7. Applications software
☐ 8. Telecoms equipment
☐ 9. Components subsystems
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The IBM-PC operating as an intelligent remote terminal to an IBM system running Issco's Tell-a-Graf package.

Package turns IBM-PC into graphics terminal

ISSCO UK announces a software package that enables the IBM Personal Computer to function as a graphics terminal for the design of high quality computer graphics. The software also provides the capability for storing completed graphics on the PC for later viewing.

The new package has two parts: a device driver for a mainframe, mini or 32-bit micro "host" computer on which Issco's Tell-a-Graf or Disspla graphics software is installed, and a floppy disc "graphics link" for the PC.

In operation, a user enters graphics commands and data through the PC, accesses the host computer software to produce graphics, and previews the results on a low resolution screen. Following preview, the graphics can be reproduced in high quality on any of more than 135 output devices currently available for Issco software, including slide-making machines, multiple pen plotters and laser printers.

Additionally, graphics can be reproduced as paper copy on an attached IBM impact printer and as overhead transparencies on a low cost digital plotter.

A further capability allows storing of completed graphics on a floppy disc for later recall and viewing, and for creating hard copy if desired.

Because the new software uses low-cost PC hardware, it can significantly reduce the costs of installing graphics capabilities and greatly increase the number of people in an organisation who can take advantage of high quality graphics.

The new product retains all the machine independence of Issco software, which means the PC can interface to computers from 10 different manufacturers: Apollo, Burroughs, CDC, Cray, DEC, Honeywell, IBM, Perkin-Elmer, Prime and Univac.

To accept the new software, the PC needs to be configured for graphics with a serial communications adaptor, a colour graphics adaptor and a monitor.

The initial price of the host computer device driver is £1,250. Encoded floppy discs cost £160 each.

Issco's recently announced Data Connection package provides a software interface between existing application software and databases and Tell-a-Graf.

Issco UK (CW), 340/2 Kilburn High Road, London NW6 2QT. Tel.: 01-328 4462.

Low-cost input claim

LATEST family of digistisers from US specialist Summagraphics is aimed at the OEM market and is claimed to offer low-cost input.

There are two models in the MM series. The MM 960 has an active area measuring six inches by nine inches. The MM1200's active area is 12 inches square. Both use the same format, so they can be interchanged to handle documents of different sizes.

All the electronics for the MM range are on a single circuit board. The units have built-in diagnostics. They can provide absolute co-ordinate output in the same way as a true digister or delta co-ordinate output such as that provided by a "mouse".

The MM products provide a resolution of up to 500 lines per inch. They can automatically scale output both horizontally and vertically to match any display resolution.

Summagraphics (CW), 3-4 Winchcombe Road, Newbury, Berkshire RG14 5QY. Tel: (0635) 32257.

Image 'lasts five years'

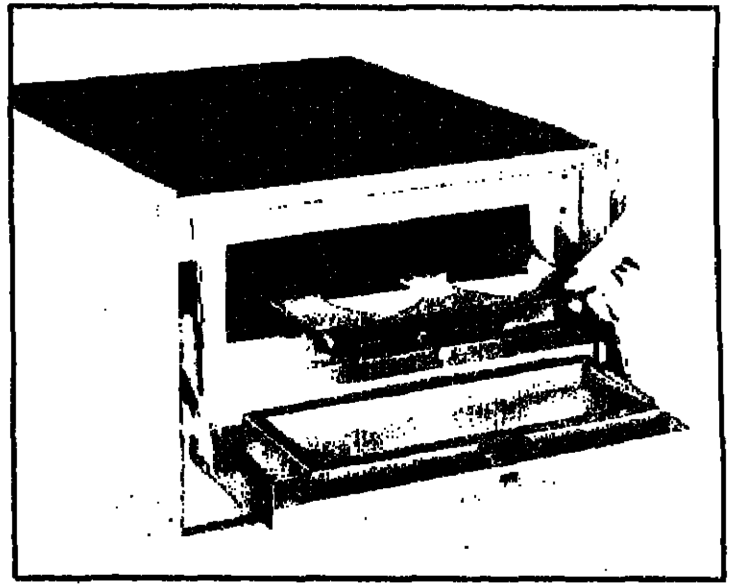
A RANGE of thermal papers claimed to reduce wear on print heads is available from Dracard. The company is setting up a network of stockists to sell the papers to users of printers, calculators and facsimile machines.

The papers are available in five sensitivities and any width up to 27 inches. Dracard says it is kind to print heads because it leaves a "neglibible" amount of residue.

The standard image colours are black or blue but other colours, plus two-colour papers, can be supplied.

Dracard says the paper will keep an image for over five years when stored in darkness under normal conditions.

Dracard (CW), Wallis Avenue, Park Wood, Maidstone, Kent ME15 9NE. Tel: (0622) 64647.



UVP's new PR-100 photoreactor.

Photoreactor solution to clean surfaces

A PHOTOREACTOR, targeted at those concerned with surface cleanliness in a wide range of high-technology industries, is announced by Ultra-Violet Products.

In many scientific and industrial applications a clean surface, free from organic contaminants, is critically important to ensure product reliability and to reduce rejection rates. In the quartz crystal, optics and silicon wafer processing industries, for example or any other applications where an automically clean surface is required, UVP claims a highly effective yet simple solution.

Designed to be a final cleaning stage after normal chemical cleaning methods have been used, the PR-100 will produce a surface that is scrupulously free of organic contamination, says UVP. Using a photochemical reaction of ozone and ultra-violet, produced within the chamber of the unit, organic contaminates up to 150 monolayers deep become active then dissociate into harmless volatile gases. The end result is that surfaces can be micro-cleaned within 5-10 minutes.

Ultra-Violet Products (CW), Science Park, Milton Road, Cambridge CB4 4BN. Tel.: (0223) 355722.

Intelligent point-of-sale device

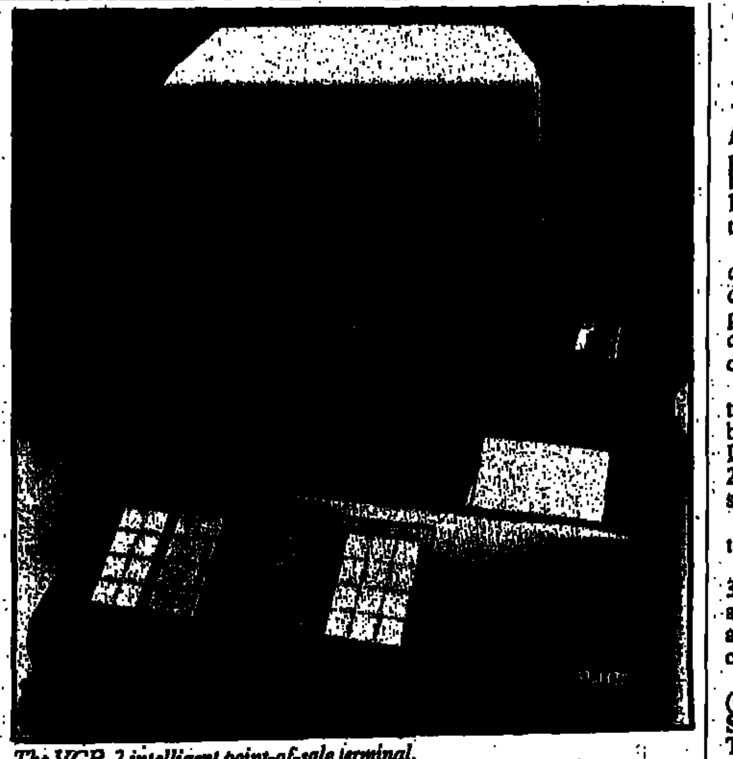
VECTOR Data Systems, of Dorset, has launched the VCR-2 intelligent point-of-sale cash register terminal, which can operate in the standalone mode as well as communicate with a computer.

The VCR-2 is intended for use with the Southwest Technical Products range of computers.

Unlike many point-of-sale terminals on the market, the VCR-2 has its own screen. This enables the user to scroll through on screen to answer customers' enquiries on, for example, prices or availability. It also has its own processor.

For storing the data from sales, there is a built-in digital tape unit and for printing out receipts a 20 or 40 column dot matrix printer.

Vector Data Systems (CW), Grosvenor Buildings, High Street, Gillingham, Dorset. Tel: (07476) 3202.



The VCR-2 intelligent point-of-sale terminal.

700 hours of memory

A MEMORY module with its own power supply has been introduced by Instem Computer Systems for Digital Equipment LSI-11 computers.

Applications include production control, where production data or control parameters need to be protected from power loss, especially when it is not practical to down-load from a host computer.

The F074 module provides up to 64K of memory with a battery back-up. It can be installed in any DEC Q-bus systems and offers full 22-bit compatibility. Operating speed is 350 nanoseconds.

Memory retention using the battery is at least 700 hours.

The memory consists of two 32K blocks, each with its own start address. The address can be set on any 8K boundary. Write-protect can be selected for any 8K block.

Instem Computer Systems (CW), Walton Industrial Estate, Stone, Staffordshire ST15 0LT. Tel: (0785) 812131.

Shannon Datastor's new diskette binders.

Binders for floppy information

DISKETTE binders for safe, anti-static storage of floppy discs and fast retrieval of information, are announced by Shannon Datastor.

The four-ring binders, in dark blue PVC with an index panel on the spine, are available in a standard version for straightforward storage and retrieval, or an easel binder which folds back to form a stable base for worktop reference to the plastic pockets holding floppy discs.

The binders hold a maximum of 40 5¼in or 20 8in discs and each is supplied complete with a set of double-sided plastic pockets which have individual index cards for each diskette. The anti-static plastic protects the diskettes from dirt and dust and the special "bubble" suface minimises contact with each diskette.

Shannon Datastor's new binders are a part of a comprehensive range of diskette storage featured in the recently published mail order catalogue.

The standard diskette binder with 20 5¼in envelopes costs £10.50 and the easel version is £12.50, exclusive of VAT. Spare sets of pockets are available at £6.75 plus VAT.

Shannon Datastor (CW), 36 Croydon Road, Beckenham, Kent BR3 4BH. Tel.: 01-650 4818.

Tilting and rotating display

ALPHA Microsystems, the UK subsidiary of Californian microsystems manufacturer Alpha Micro, has announced the addition of the AM-60 video display terminal to its product line.

The AM-60 features a tilting/rotating screen display, detachable keyboard, horizontal/vertical split screen capability, line drawing character set, programmable function keys, and programmable status lines. It can be used with any Alpha Micro system from the seven-user desk-top computer to the 60-user AM-1062 supermicro.

"Our dealers can now enjoy the convenience of a single source of supply and service for both Alpha Micro video display terminals and Alpha Micro computer systems," said David Ford, UK general sales manager. "In addition, we can now develop software that takes advantage of the many special features of the AM-60 – an extra benefit from including terminals as part of our line of peripherals."

Alpha Micro designs manufactures and markets microcomputers for business, professional, scientific and educational use. These are distributed through a worldwide network.

Alpha Microsystems (CW), 56 Herschel Street, Slough SL1 1PY, Berkshire. Tel: Slough 821922.

If the power goes down

THE Dataguard uninterruptible power supply from Aztech Equipment Sales removes mains interference and can run a microcomputer for 2.5 hours in a power failure.

The UK-built unit has a sealed, maintenance-free battery, a charger, a converter to change between battery and mains output and a monitor and switch to move from the mains to the Dataguard at the relevant moments.

Aztech Equipment Sales (CW), Sanderson House, 22 Station Road, Horsforth, Leeds LS18 5NT. Tel: (0532) 580058.

More store on Z100

ZENITH Data Systems has launched Winchester drive versions of its Z100 series of microcomputers.

The Winchester systems increase the storage capacity of the Z100 series while enabling users to access information faster, says Zenith.

The new versions of the Z100 have built-in 5in Winchester hard disc drives with a capacity of 11.7 Mbytes formatted.

There are two Winchester models available, the ZW-110-32, a low-profile microcomputer for colour or monochrome display using an external monitor; and the ZW-120-32, an "all-in-one" microcomputer with built-in green screen video display.

Both have all the standard features of the Z100 series, including dual 8 and 16-bit microprocessors, five S100 bus with four slots for expansion.

Zenith Data Systems (CW), Bristol Road, Gloucester GL2 6EE. Tel: 0452 29451.

A printer from Japan

A DRAFT and correspondence matrix printer from the Japanese firm Toshiba is now available in the UK from Thame Systems.

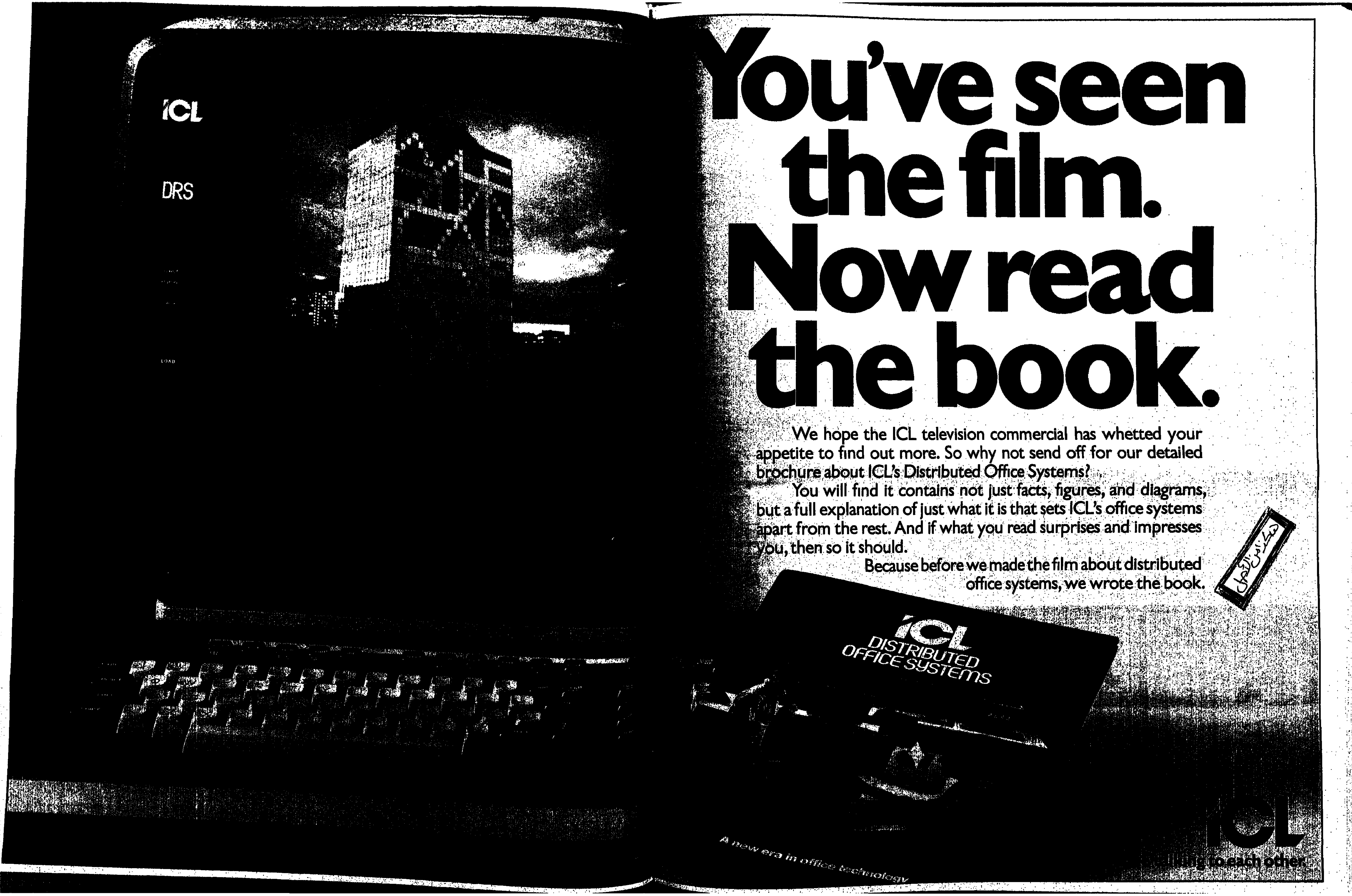
The TH2100H has a 24-pin head. It prints at up to 192 characters a second for drafting and at 100 characters for letter quality. For correspondence quality the unit prints overlapping dots in a single pass.

Two letter-quality founts are provided as standard. Over 60 international and graphics characters are available. Proportional spacing is a standard option.

The international RS232 interface is standard and there is an optional Centronics parallel interface and a link to the IBM Personal Computer.

Paper feeding can be handled by single – or bi-directional tractors or a single-sheet feeder for A4 stationery.

Peripherals Division, Thame Systems (CW), Thame Park Industrial Estate, Thame, Oxfordshire OX9 3RS. Tel. (084421) 5471.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For further information contact Lorna Fraser/Ken Lynn/Anita Hamilton.

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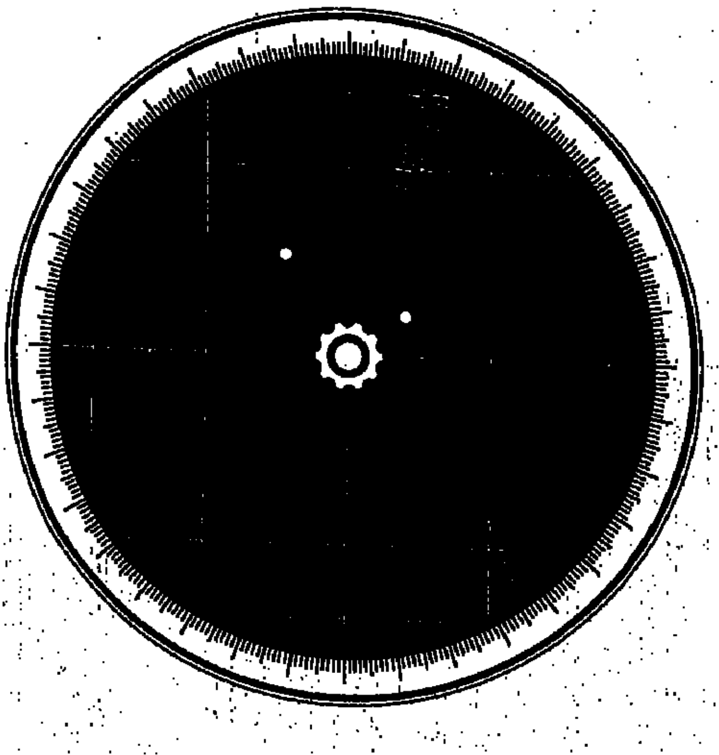

A squadron of Bears is approaching from over the North Cape at 32,000 feet and 350 knots, and registers on the screens of the AEW Nimrod aircraft. At the bottom left hand corner of the screen appears the symbol for the squadron of Phantoms scrambled a few minutes ealier from an RAF base in Scotland.

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If that's not too much to imagine, picture yourself working in roles such as these:

SYSTEM ENGINEER

Following the integration of the Simulator, the main task you will have will be, as a member of the team, to carry out testing to the high standards required for delivery to the RAF. Until then, you will be getting to grips with the working of the Simulator and generating the test schedule.

You will need a high level of system comprehension in order to apply engineering skills to operational problems and testing. A degree or HND in science/engineering, together with relevant experience is required for this function. Operating experience in AEW and/or aircrew would be advantageous.

MICROPROCESSOR ENGINEERING

We're using components such as the Z8000, 8086 and 9900 extensively for dedicated tasks in the overall system, so if you've worked on systems that feature such components, there'll be plenty of development and integration work for you to handle.

We've roles for men and women with as little as one year's relevant experience to more than three years, and qualifications from HTEC or equivalent in electrical engineering, to a degree or HNC in a computer-related subject. We're looking for a man or woman with a degree HND in electronics or computer science, and several years experience of computer based or other digital systems. Ideally you'll have gained your experience on the GEC 4000 series computer system.

JUNIOR ENGINEER with an interest in digital systems

This could be where your career in electronics really begins. If you've a strong interest in digital and computer work – and perhaps audio systems – and especially if you're qualified to HNC level or equivalent and you're working in any of these areas already, you could be closely involved in a wide range of the Mission Simulator's systems, from development right through to commissioning.

INSTALLATION ENGINEER electrical services

You'd be responsible for installing, at the RAF operating base, all the Simulator's electrical interfaces and services, of which there are many, and you'll be involved in their design and development aspects.

We're looking for a man or woman with at least five years experience in electrical engineering for aircraft, industrial or even domestic installations. Experience will count far more than formal qualifications, so your career could well have started with an apprenticeship in electrical/electronic engineering.

If you like the sound of working with the company that developed the AEW Nimrod's systems in the first place, we can assure you that you won't be disappointed by our salaries and benefits package – which includes assistance with relocation.

But your first move should be to telephone or write, quoting Ref, MA 83-209, to Sheila Perry, Marconi Avionics Limited, Eaton Road, Hemel Hempstead, Herts. Telephone Hemel Hempstead 42141.

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Outstanding opportunities in all areas of the USA

We are looking to recruit a number of computer professionals for one of the largest computer services companies in America. The positions are in all areas of America and we would like to hear from people with the following experience. Salaries will depend on your experience.

Project Leaders
Analysts
Analyst Programmers
Programmers
Systems Programmers

DB/DC IMS
CICS IDMS
COBOL

A number of people are required specifically in the West Coast and the South of the USA for top level development projects.

Analyst Programmers
Programmers

DL/I experience
with IMS or CICS
some exposure
to COBOL.

Again, a number of professionals are required for positions all over the United States.

Technical Specialists
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UNIX
and C

The fast moving world of UNIX and C offers opportunities for technical people to work in New York State and other areas.

Analysts
Programmers
Designers

BURROUGHS
LARGE HARDWARE
COBOL GEMCOS DMS

Again a number of people are required for a variety of projects all over the USA.

Interviews will be held in our London headquarters at the end of June/beginning of July. To find out further details on these positions please ring Douglas Woodward or Janet Chilvers on 01-734 7394 during working hours or after working hours on 01-627 2813. Alternatively please send in your career details to Warwick Woodward, Freepost 37 (No stamp needed) London W1E 6UZ marking it 'USA'.

WARWICK WOODWARD A SPAN GROUP COMPANY

43-44 GREAT WINDMILL STREET, LONDON W1V 7PA
TELEPHONE: 01-734 7394 24 HOUR ANSWERPHONE

MANAGEMENT & EXECUTIVE SELECTION

telephone
01-637 9611

BUSINESS ANALYST

INTERNATIONAL COMMUNICATIONS

£13-£14,000

To lead business systems development for an international market leader in computer peripheral equipment now embarking on a major programme of advanced communication systems implementation to link their European and American operations.

This vitally important position demands the ability to:

- identify, propose and agree business system solutions;
- design, develop and implement solutions;
- liaise/monitor on computer development throughout the organisation;
- understand/assess available mini/micro hardware and software;
- educate and train users

Reporting directly to the Director, Customer Services Europe based in Surrey, the successful applicant is required to travel extensively in Europe with the consequent ability to self-motivate and self manage.

He or she will be aged 26-32, educated to degree or equivalent. Having, most likely, worked in a d.p. user department, experience must include training in systems analysis and design and the successful development of at least two projects from initial feasibility to implementation. Direct experience of communications, preferably international.

Excellent company benefits include a relocation package if necessary.

For an immediate interview please contact Karen Whelan

Suite 201/8 Albany House
324 Regent Street London W1

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SOFTWARE SERVICES MANAGER

to £18K + Bonus **HERTS**

Our client is a world leader in the research, development and manufacture of prescription medicines. Their continuing commitment to growth and research and development has resulted in the formation of the Research Computing Department to provide technical expertise and appropriate data processing knowledge in the development of computer systems to the research departments.

A software services manager is required to lead an expanding group which develops and supports existing and new systems and proposes computer solutions to scientific problems.

The successful candidate, a graduate, will have a good appreciation of computer capabilities, experience of a variety of hardware, including sound understanding of the DEC range of machines, be able to communicate effectively and show flexibility in problem solving.

The company, which is set in 39 acres of landscaped country estate, offers generous fringe benefits including an annual bonus.

For further information please telephone Keith Taylor or write enclosing a full C.V. to our Reading office.

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Visits to member companies will be involved so a current driving licence is essential.

In addition to attractive starting salaries these posts offer an excellent opportunity to further your career prospects within a fast-growing, successful team. Relocation assistance may be available.

Come to Sherwood Country, where you can still see the wood for the trees. It's a real breath of fresh air.

SYSTEMS ANALYSTS

Ideally, applicants will have 3 to 4 years analysis experience and be able to demonstrate involvement in a number of projects from concept through to implementation.

One for ICL ME29

One for Honeywell Level 6's

Honeywell Level 6 experience under GCOS would be an advantage.

ANALYST PROGRAMMER

Applicants must have extensive experience of programming in COBOL on Honeywell Level 6 under GCOS. You should be able to demonstrate involvement in analysis work.

PROGRAMMERS

Suitable applicants will have at least 2 to 3 years relevant COBOL experience which must include time spent on Honeywell Level 6.

Please apply with c.v. including current salary to:

Bob Moulsdale,
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Botany Avenue, Mansfield,
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London West Computer Recruitment

Technical Services Manager
South Hants to £14K

A large manufacturing group seeks a manager for their IBM technical services group. Candidates of degree or equivalent status and 28-40 years old, should ideally have 5 years involvement in IBM DOS systems programming, 2 years assembler and 1 year of VM experience. Attractive location. Good benefits. Re-location assistance. **Ref. 640**

Systems Analysts
Berks to £13.5K+

A major group operation with a heavy investment in a growing IBM mainframe network seeks several analysts to help develop new marketing, manufacturing and accounting systems. A strong IBM background and experience of on-line databases is required. Excellent benefits and prospects. Re-location assistance. **Ref. 734**

IBM A/Programmers
Berks £10.5-16K

The services division of a manufacturing group require analyst programmers aged 25-32 years for a support function involving client liaison and systems enhancements. Previous analysis and a minimum 2 years PL1 or Cobol experience required. (IBM preferred but not essential). Excellent benefits and prospects. **Ref. 737**

IBM Systems Programmers
South West £10-14K

Leading financial services organisations seek IBM systems programmers with a minimum of 2 years DOS VSE or MVS experience plus CICS and preferably DL1 knowledge for systems support of major new developments. Substantial benefits and good prospects. Re-location assistance. **Ref. 671**

Write or telephone:
London West Computer Recruitment
Evergreen, Dauntsey, Chippenham,
Wiltshire SN15 4JA
Telephone: (0249) 891114

ICL A/Programmers
Glos. to £9K + car

The headquarters company of a large UK distributor group operation requires an analyst programmer and a Cobol programmer for their dual ICL ME29 installation. IDMS and TP knowledge will be advantageous. The benefits package includes a company car for both positions. **Ref. 707**

Micro Programmer
Glos. c. £9.5K

A well established, small/medium sized company with a reputation as market leaders in their field require a programmer to help develop advanced, integrated, microprocessor based systems.

This is a first class opportunity for a programmer with a minimum 1 year's experience of Intel 8085 or Z80 assembler programming. HND/HNC/degree qualification essential.

The company is located in an attractive Cotswold town. Excellent benefits include 25 days holiday per year, contributory pension scheme, free life assurance. Re-location assistance is available. **Ref. 728**

ICL Analyst, Programmers
Avon to £10K

Leading financial services organisation has vacancies for an analyst – preferably with an insurance background – and programmers to develop new systems in Range Cobol and Filetab on an ICL 2966 running under DME/VME and TPMS. Usual benefits associated with financial services companies. **Ref. 732**

Office Systems Designers
Wilts., London £10-15K

A leading company manufacturing and marketing automated office systems and personal computers requires software/hardware engineers, software designers and project leaders. Microprocessor assembler and high level language experience is required. Appropriate degree essential. Excellent conditions and benefits. **Ref. 692**

Electronics Engineers
Midlands £ negotiable

A high technology company requires engineers with at least 5 years research experience for their R and D laboratory for new product research, quality control investigation and technical service support for the group's operations. Graduates with higher degrees preferred. Rural location. Excellent benefits. Re-location assistance. **Ref. 756**

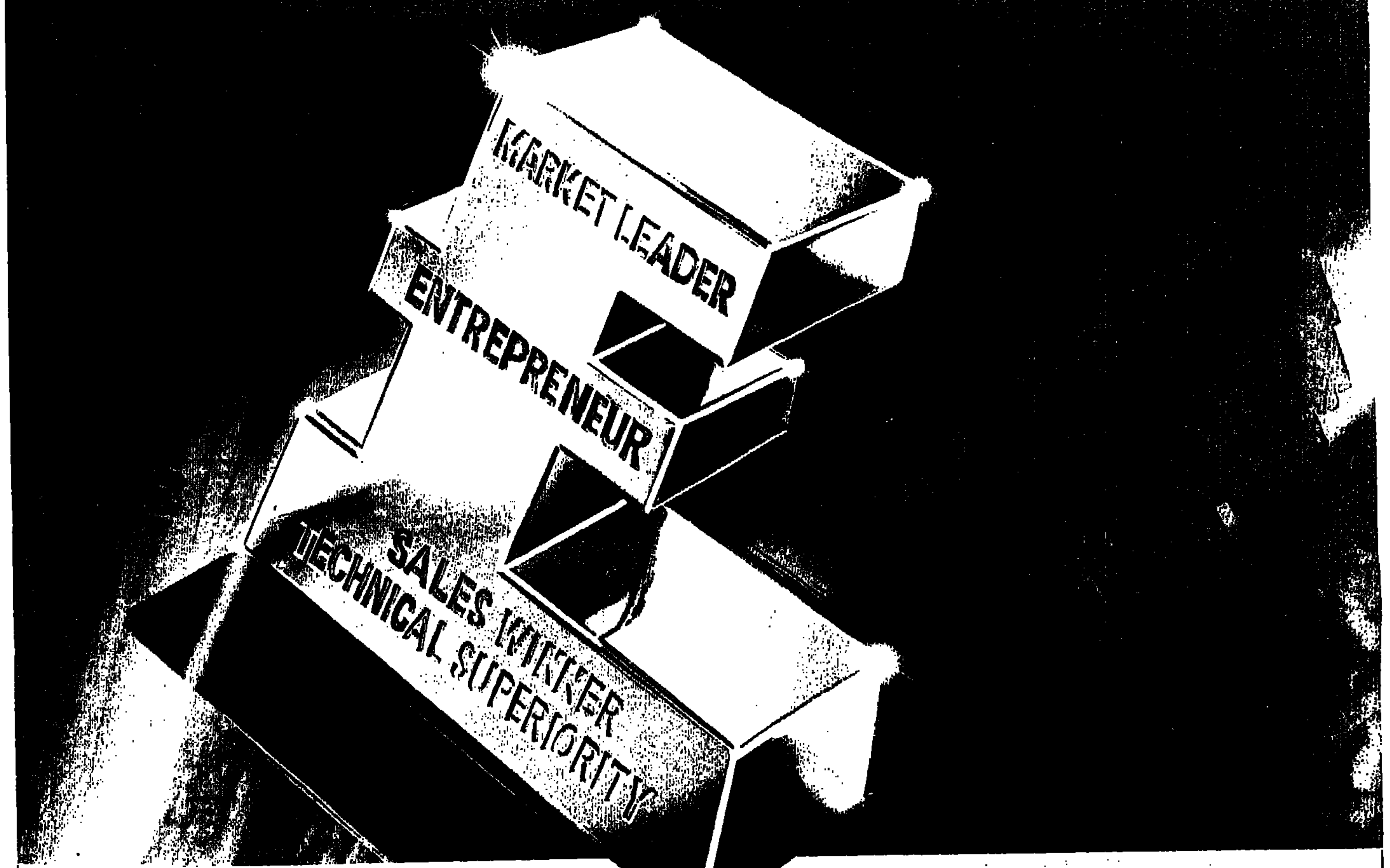
Design Engineers
Hants., Somerset to £12K

Major companies developing a variety of military applications seek hardware design engineers with broad based experience in control systems/datalogging/instrumentation/automation or similar applications. Candidates aged 24-35 years, must have HND/HNC/degrees and some software experience. Attractive locations. Good benefits. Re-location assistance. **Ref. 750**

Real Time Engineers
West, South, Wales £10-£15K+

Major companies developing real time applications in telecommunications, process control, telemetry, industrial automation and military systems require experienced team members and project leaders. Computer Science/Engineering degrees essential, plus assembler and/or high level real time language experience. Excellent benefits. Re-location assistance. **Ref. 614**

SOFTWARE ENGINEERS GET YOUR SHARE of the PLESSEY SUCCESS



As the total success story of Plessey grows so do the opportunities and challenges for Software Professionals at our Digital Technology Design and Development Centre.

The prime function of the Centre is to create new products and convert others to fully exploit market opportunities. The Centre is very much a 'centre of excellence' playing an important role in keeping us well ahead of the competition in the particular fields of technology in which we excel. Typical examples of how we lead the market are Plessey IDX, which with its technical superiority, is now outstripping the opposition resulting in new and increased sales for us at home and abroad and CDSS (a small digital PABX) already a proven success and now rapidly winning more export orders.

We now require experienced software engineers to join existing compact development teams in the following important areas.

Software Design

To be responsible for the specification, design, implementation and test of software for real time operation and application of telephone and data switching systems.

The current range of project include:- Basic operating system development, 'Expert' systems for maintenance and diagnostics, network control and management packages, on board software for I/O controllers, voice response systems.

Use is made of State Transition Diagrams and Structured English for specification and design. Both high and low level languages are used on mini and micro computers, appropriate to product and application.

Product Configuration Support

A number of programs are under development on our VAX11/780 to produce a flexible means of configuring our products from quotation to software and hardware production and beyond to systems extensions.

Programmers interested in this area should have experience of manipulating large data bases with a knowledge of VAX/VMS and PASCAL.

Software Products Support

A varied responsibility covering 3 major areas:

1. Maintenance of our software products in the field.
2. Adaptive Engineering to modify the standard system software to specific customer requirements.
3. Project Management – the estimating, planning, monitoring and co-ordinating of the major software developments within the Department.

Software Quality Assurance

A well established team involved in all aspects of the software life cycle from requirement analysis to system test and post delivery maintenance. The primary roles are the development of standards and practices, and the assurance that the software products conform to these standards.

The Software Quality Engineers participate in requirement/specification playthroughs, design reviews, code walkthroughs, system testing, and software release.

Planned activities include the development of metrics to assess the quality of specifications, designs and issued systems.

Software Support

Responsible for the provision of the tools, both H/W and S/W, required by the other groups for the development, production and support of switching software.

The team is responsible for the running and maintenance of development computers (Intel MDS, Data General ECLIPSE and DEC VAX 11/780) and the target product lab.

The Software tools provided range in application from microcode assemblers to resource management packages. Implementation of these tools being in ASSEMBLER, FORTRAN or PASCAL.

The Software Support Engineers need to be able to switch attention rapidly between differing, complex problems.

The Financial Package

Our terms of employment are first class with an attractive remuneration package and very generous financial assistance for those needing to relocate. The area offers excellent housing, educational, social and recreational facilities – our personnel department can tell you all about them in detail.

To enable you to gain first hand experience of the Plessey success in Nottingham we will be inviting selected applicants to spend a weekend with us. During this time you would be able to discuss projects with management, look around the Centre and explore and get a feeling for the locality.

Holiday Arrangements

We will honour all holiday arrangements of any Software Engineer joining us during the next few months.

If you would like to join us you should possess a relevant qualification to degree level and have 2-3 years experience, (for the more senior posts 3-4 years or more). Knowledge of Telecommunications desirable but not essential.

Talk to a professional like yourself.

Just pick up the phone, dial 0602 866522 ext. 2468 and have an informal chat with Roger Andrews, one of our software managers, between 12 noon and 7 pm about the stimulating projects we are currently working on and the others that are planned.

Alternatively send brief career details to:- Bob Elsden (Ref. CW/P/605) Plessey Office Systems Limited, Abbeyfield Road, Nottingham NG7 2SZ.

PLESSEY

Senior Systems Programmer

Up to £14,000 + Car + Benefits Wiltshire

"Our Systems Programmers
can exercise real influence
on our computing future
and in so doing
greatly enhance
their future prospects
and technical abilities".

We would normally start this advertisement by saying what a hugely successful and progressive Company we are, but we are reliably informed that Systems Programmers are more interested in our computer installation and technical facilities.

So we'll start by telling you that we have an IBM 3081G and a 3031 (which incidentally is for systems programming use) running MVS/SP 1.3, ACF/VTAM, IMS/VS 1.2, TSO, APL, ROSCOE, SAS, and more than space here can tell. We also have laser printers, 8100 minis, 3750 telephone exchange and much more. Future plans include installing ACF2, ASM2, and DF/EF and evaluating DISOSS II, DBRC and ADF, as well as preparing for MVS/XA and IMS 1.3.

We would like to recruit a Senior Systems Programmer with at least 3 years systems programming experience most recently within an MVS environment and a good knowledge of at least one of: MVS, IMS, ACF/VTAM, 8100/DPCX, SMF/RMF data analysis and reporting, or software tuning.

If you think you may be interested, you'll probably want to know that we have built our highly successful Group of Companies around our computer facility and so a role within Technical Support is one of real influence and scope.

Add to all this the fact that we pay excellent salaries, with a substantial range of benefits including non-contributory pension, BUPA, profit sharing and full relocation to Wiltshire. This is an outstanding career opportunity – make sure you don't miss it.

To arrange a confidential interview, contact our Advisor at SCR, Martin Stainthorpe, on 021-236 3781 (24 hour answering service) or 021-744 1862 (Evenings 7-9pm and Weekends).

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Specialist Computer Recruitment Ltd

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021-236 3781

NORTH
International House, 84 Deansgate,
Manchester M3 2ER
061-833 0427

BELGIUM
Avenue Louise 327,
Boite 4, 1050 Bruxelles
010 322-640 7151/71

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As one of the market leaders in the System/38 field we can offer you a highly rewardable career opportunity.

For further details contact:
Ray Slattery,
DATASENSE LIMITED, Blue Line House,
Angel Road, Edmonton, London N18 3BJ.
Telephone 01-803 8618.

(3294)

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DISC DEBENHAMS INTERACTIVE SYSTEMS COMPANY LIMITED

The Company provides a wide range of computing services to a large client-base. The Data Centre operates 2 x ICL 2966 mainframes (DME/G3), a number of microdata Reality/Sequoia minis, and an extensive communications network. We are experiencing significant growth in all of these services and we are therefore seeking the following staff:

COMPUTER OPERATIONS STAFF

Applicants should have at least 2 years operations experience, preferably with ICL mainframes, ideally G3, and will be prepared to work within our current shift pattern.

DATA COMMUNICATIONS TECHNICIAN

Candidates will have at least 2 years Data Communications, or appropriate British Telecoms, experience. Reporting to the Data Communications Manager, they will be self-motivated and capable of using initiative in the operation of this Department.

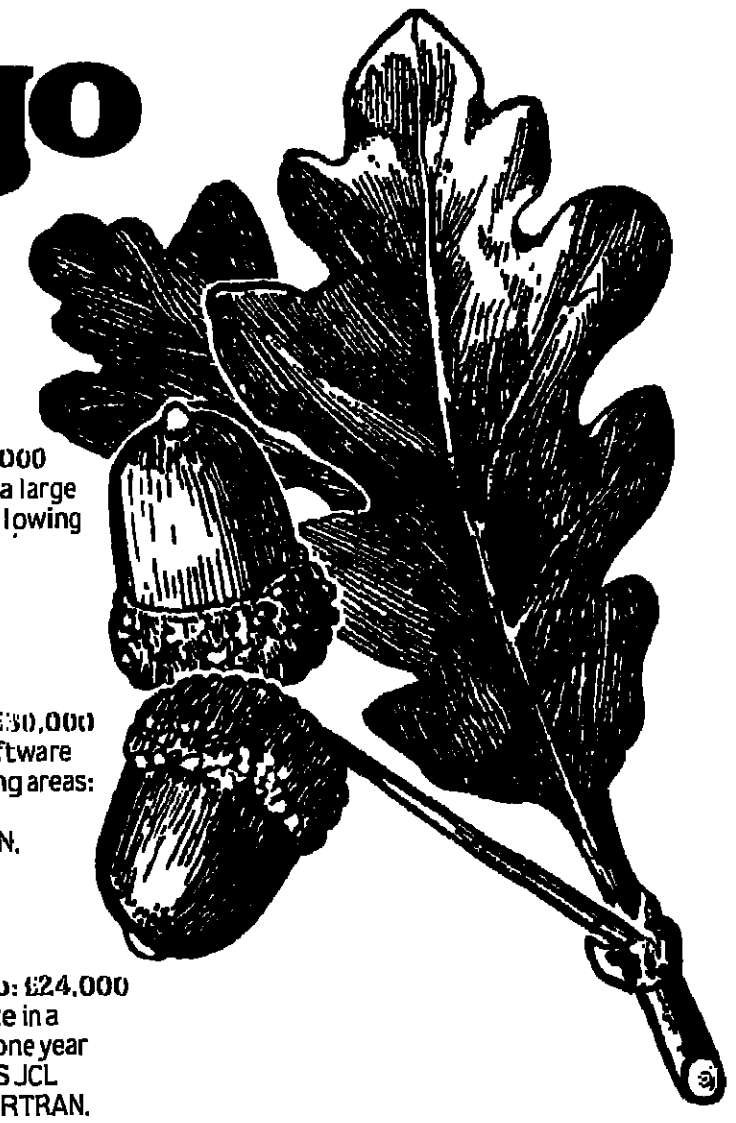
An attractive salary package, commensurate with experience, will be offered to the successful candidate.

Applications in writing please to:

Mr. S. A. Jackman, Personnel Manager
DISC
Bedford House, Park Street, Taunton
Somerset TA1 4DB

(4135)

Success in Recruitment doesn't always go to the biggest!



Comcap Resources Limited was originally launched some eighteen months ago, to provide the data processing industry with a comprehensive and reliable recruitment service.

Obviously in such a specialised market place both are of paramount importance and Comcap Resources offer without doubt one of the most flexible D.P. Recruitment services available today.

They have acted on behalf of numerous "Blue Chip" companies both in the UK and Overseas – placing the right people in the right jobs at the right time.

An indirect result of this ability to match people to position is a large number of unsolicited applications from other data processing staff who have seen just how reliable Comcap Resources are.

They have also benefited from the backing and experience of the Comcap Group who are major suppliers of IBM Computer Hardware throughout the business centres of Europe.

With this impressive profile they are continually extending their interests to Saudi Arabia, and now must rate as one of the most successful recruitment agencies in that part of the world.

As you can see they are currently recruiting several high level IBM Computer personnel on behalf of a leading international company, who boast one of the worlds most sophisticated 'state of the art' installations.

ANALYST PROGRAMMERS To: £24,000
Required Skills: At least three years experience in a large IBM environment with experience in one of the following areas:
PLI/FORTRAN – Engineering or Scientific
PLI, IMS, ADF – Commercial/Financial
MARK IV, TSO/SPF, or SAS.

SYSTEMS PROGRAMMERS To: £30,000
Required Skills: A minimum of two years Pure Software Systems experience in one or more of the following areas:
DATA COMMUNICATIONS (NCP, VTAM, MSNF)
GENERAL PURPOSES SOFTWARE (PLI, FORTRAN, MARK IV)
OPERATING SYSTEMS (MVS, JES 2/3, VM 370)

TRAINING CONSULTANTS To: £24,000
Required Skills: Minimum of two years experience in a large IBM mainframe environment plus at least one year teaching/training experience. Knowledge of MVS JCL TSO/SPF and Utilities, together with PLI and FORTRAN. Must be able to work with students for whom English is a second language.

OPERATIONS ANALYSTS To: £21,000
Required Skills: At least five years experience in a large IBM installation in some of the following areas: JCL (Datalogue procedures, Job flow control), SOFTWARE MONITORING SYSTEMS (Data reduction and Graphic presentation)
DATA SECURITY (RACF or ACF/2) TSO, MVS, IMS, Change Control or Capacity Planning.

SENIOR OPERATORS To: £18,000
Required Skills: At least four years experience in a large IBM installation using MVS JES 2/3 TSO JCL and Utilities. Or two years experience in a large VAX installation especially in the areas of Graphics output and Peripherals.

In addition, the salaries carry all the tax advantages of working in Saudi Arabia and a benefits package which includes Free Air Fares, Free Transportation, Excellent Recreational Facilities and Free Accommodation.

To arrange a confidential interview contact our overseas division now, or alternatively complete the coupon below.

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Job Title: Tick appropriate boxes. Please send an application form: ☐ Location Preferred United Kingdom: ☐ Overseas: ☐
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SOFTWARE SALES EXECUTIVES **Manchester - Birmingham - London** **£25,000 + Car**

We have been retained by a prestigious software marketing company to assist with their recruitment programme.
Their marketing success in the field of financial and manufacturing software systems on mini/microcomputers has created an urgent need for three young and ambitious Sales Executives.
A minimum of three years' experience in selling business solutions to computer users is required for these positions.
Telephone our Consultant now, quoting Ref: F73, to arrange an immediate confidential interview.

SALES MANAGER (DIRECTOR DESIGNATE) **London** **£27,500 + Car**

An opportunity to move into Sales Management with a leading supplier of mini and micro computer systems.
Our client is seeking an experienced Sales professional to manage and direct a young and highly successful sales force. Your experience will have been in the marketing of business systems to commercial users at the mini computer level.
This is an excellent opportunity for a successful sales executive to demonstrate and improve his/her management skills.
Contact our Consultant now, quoting Ref: F76, to discuss this attractive position.

SENIOR SALES ACCOUNT MANAGERS **U.K.** **£35,000 + Car**

Our client, a major supplier of large mainframe and minicomputers is currently looking to expand its major Accounts Sales Division.
They seek top sales professionals with a proven ability to handle existing key customer accounts. You should be able to show a successful track record in large system sales as a necessary prerequisite for these excellent opportunities.
All mature and successful Sales Executives should contact us quoting Ref: F79 to arrange a confidential interview.

SYSTEMS DESIGNERS/ANALYSTS **Wiltshire** **c. £15,000 + Car + Excellent Packages**

Our client, a major financial institution, currently undertaking a dynamic expansion programme has engaged our services in the recruitment of ten Designers and Analysts to assist in these major development projects.
If you have the desire to expand your career with this rapid growth company and have a successful record of implementing large financial projects, you would benefit from an initial telephone call to our Consultant quoting Ref: J131.

ICL COBOL PROGRAMMERS **Hants** **to £9,500 + benefits**

Our client, a household name, are developing their wide-ranging service facilities and are supplementing their development teams with 12 more Programmers.
Can you offer commercial ICL COBOL experience under VME, DME or TME, or SCL?
In return they can offer you the opportunity to gain Database experience on wide-ranging commercial applications, with excellent career prospects. Telephone our Consultant now quoting Ref: J117 for more information and to arrange an immediate, confidential interview.

CHIEF PROGRAMMER & PROGRAMMERS **Surrey** **to £13,000 + Substantial benefits package**

One of our most respected clients, a major insurance company, offers a unique career opportunity for a Programming Team Leader to take control of new project developments. This will encompass setting up standards and procedures and quality control of technical design and programming.
You should be able to prove your extensive IBM COBOL Programming expertise in a DOS environment with CICS and DL1.
Two Programmers are also required to supplement their programming team currently developing an on-line data-base system. If you have two years' IBM COBOL Programming experience with CICS and DL1 and seek the opportunity to widen your career potential, telephone our Consultant quoting Ref: J115.

If you believe your experience matches any one of the above criteria, then light up your future by contacting:
Fred Bramley (Sales) or Peter Jezeph on Farnborough (0252) 516141 or write enclosing a detailed cv.

(4107)

TRIDENT COMPUTER SERVICES PLC

TRIDENT HOUSE,
38/44 VICTORIA ROAD, FARNBOROUGH,
HANTS, GU14 7UD, Telex: 858 233
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Computer Services Operator

Saudi Arabia

c.£14,600 p.a. tax-free

This is a challenging position with the operations team at the King Khalid National Guard Hospital in Jeddah. This is a 500-bed secondary referral hospital which is managed by the International Hospitals Group (IHG) in association with IAL.

The Hospital has comprehensive Administration, Patient Management, Patient Care and Laboratory Services systems – based on multiple linked 11/70's operating under RSTS/E and using DECNET.

You would be responsible for operations during a shift; initiating systems; monitoring input and distributing output; informing users of system status and taking corrective action on central hardware or on a communications failure.

With your HNC or GCE 'A' levels you must have 2 years operating experience including at least one year on a DEC PDP 11/70 installation.

The tax free salary of SR80,500 p.a. will be paid in Saudi Riyals (the conversion to sterling has been effected at the rate SR5.5=£1).

Benefits include free accommodation, 49 days annual holiday, free return flights to the UK and free medical care. Facilities include shops, gymnasium, theatre, swimming pool, tennis courts and restaurants.

Preference will be given to suitably qualified Saudi Arabian nationals and arabic speaking personnel.

For further details please telephone Alexander Sneddon on 01-574 5432 or send your c.v. to him at IAL, Aeradio House, Hayes Road, Southall, Middlesex, UB2 5NJ. Please quote ref. M092.

IAL

MEDICAL SERVICES
COMMUNICATIONS SYSTEMS
COMPUTER SYSTEMS AND SERVICES
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(4080)

Computer Project Leader

£13,900-£17,400

Today's Post Office — an industry with a turnover of £2 billion — is a major force in the country's vital communications and distribution network, providing a diverse range of operations and services that is constantly expanding and being updated to meet the ever-changing needs of both the community and business sector alike.

We are seeking a suitably qualified Computer Project Leader for our Financial Accounts Department, based in Chesterfield.

Duties

The successful applicant will be responsible for computer project management including systems analysis, design and development, the design of software packages and the evaluation and implementation of accounting projects. Specific responsibilities will include development and field trials in local post offices of Revenue Billing and Cash Management; the development of accounting applications on various other types of equipment; participation in the evaluation of appropriate computer equipment; and also the effective leadership of a small team.

Qualifications

Candidates should have extensive computing experience with a minimum of 3 years proven management track record in the design and control of computer systems; considerable experience of manufacturers' hardware and software, specifically in the mini-computer ranges; and a working knowledge of COBOL. Experience of the NCR 9000 series, small business computers, and financial accounting systems would be an advantage. Personal qualities must include the ability to create team spirit and to deal successfully with people at all levels both inside and outside the Post Office.

Pay and Conditions

Starting salary will be in the range quoted. There is an excellent leave allowance and a contributory pension scheme.

Application forms can be obtained from Mr. R. B. Langford, PHQ/PP7.2 Room 329, Post Office Headquarters, St. Martin's-le-Grand, LONDON EC1A 1HQ. (Tel. 01-432 4683). The closing date for applications is 30 days from publication date.

The Post Office

SOFTWARE SCOTLAND

Our clients in computer and electronic manufacturing, defence, oil and the offshore service companies urgently require graduate software engineers with a sound background in any of the following areas:

• real time applications • process control
• data communications • CAD/CAM • graphics
• data base techniques • microprocessor development systems

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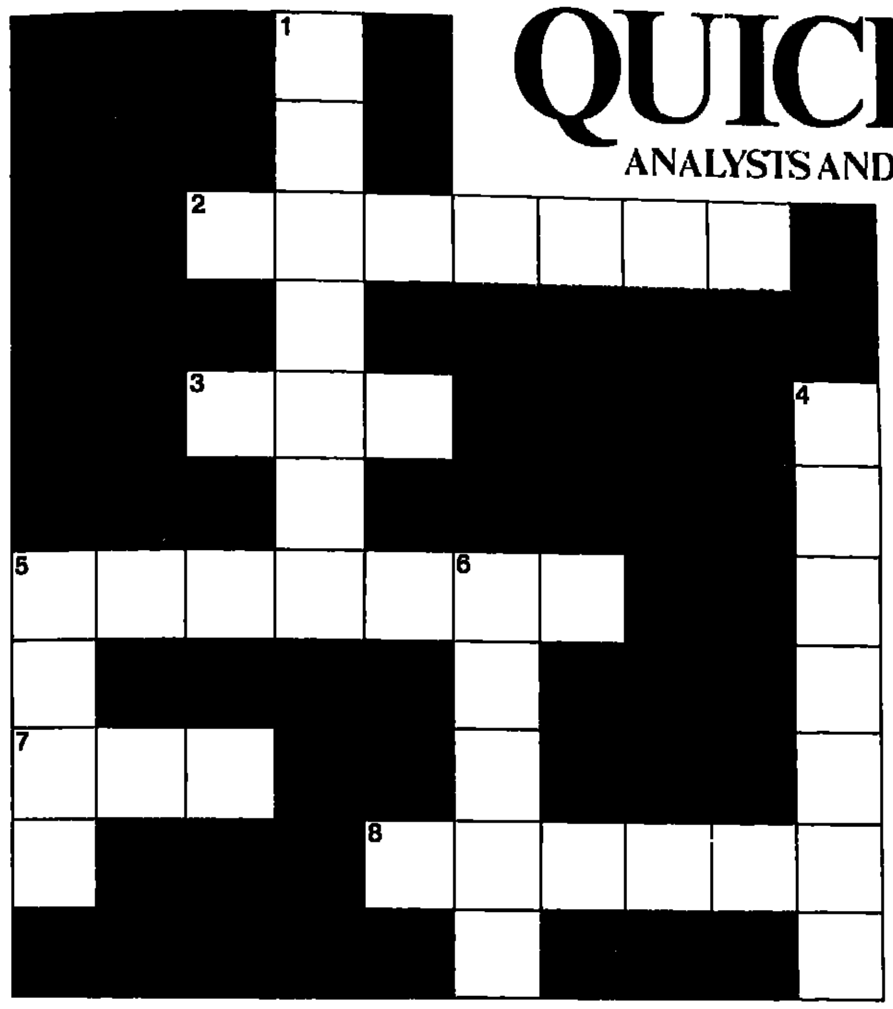

QUICK CROSSWORD

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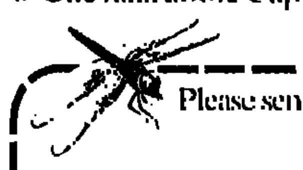
Spending five minutes completing the crossword will give you a clue to the exciting career prospects now available with our Client.

ACROSS
2 It's not communications or command but its part of 'C'.
3 Not old.
5 You will already have taken part in the development of one or more of these.
7 Opposite of then.
8 You complete the football one in the hope of winning millions. Fill in ours for an exciting new career.

DOWN
1 You do it to your own career by applying to work on this new one.
4 Order about.
5 To post off as with the coupon below.
6 One rank above Captain in the Army.

Our Client, a world leader in the field of command and control systems is now seeking further Analysts and Consultants to support the development of a major new project for an overseas client.

Now spend two minutes completing the coupon and we will send you the solution to the crossword, an application form and a Company Profile which will tell you all you want to know about the Company and the Positions.



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0475

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£8,000-£14,000K + Car.

Recent extensive additions to their existing services have created, for our client, a need for a range of staff from programmers, designers and software specialists to support roles. Candidates should have experience (6 months +) of using PRIME systems in any one or more of these capacities, covering commercial, technical, automated office or scientific applications.

CONTACT DON KNAGGS

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Our client is a major prestigious force in the most up-to-date sector of the industry covering military, defence, process control and CAD/CAM. They require hardware, software and support engineers, designers and programmers with experience of communications (real time) PL/M-86, C, CORAL, PASCAL, FORTRAN, Assembler, Mascot, ADA, etc.

If you have two to four years' experience or more and ideally a HNC/HND or degree then this rare opportunity should not be missed.

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Applicants for the programming positions should have a good working knowledge of either Screenwrite or Cobol, whereas experience of both languages will be required for the senior positions.

We offer a competitive salary supported by a substantial range of fringe benefits associated with a major company.

If you are interested in an exciting and challenging career and are seeking opportunity and responsibility, please write giving brief details to:

(4134)

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High basic salaries may be enhanced by generous allowances for a voluntary, but particularly convenient shift system which does not involve night work. There is also substantial, again voluntary, paid overtime available. Comprehensive benefits include a very generous relocation package to a sought-after area which features excellent amenities and well-priced housing.

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(4181)

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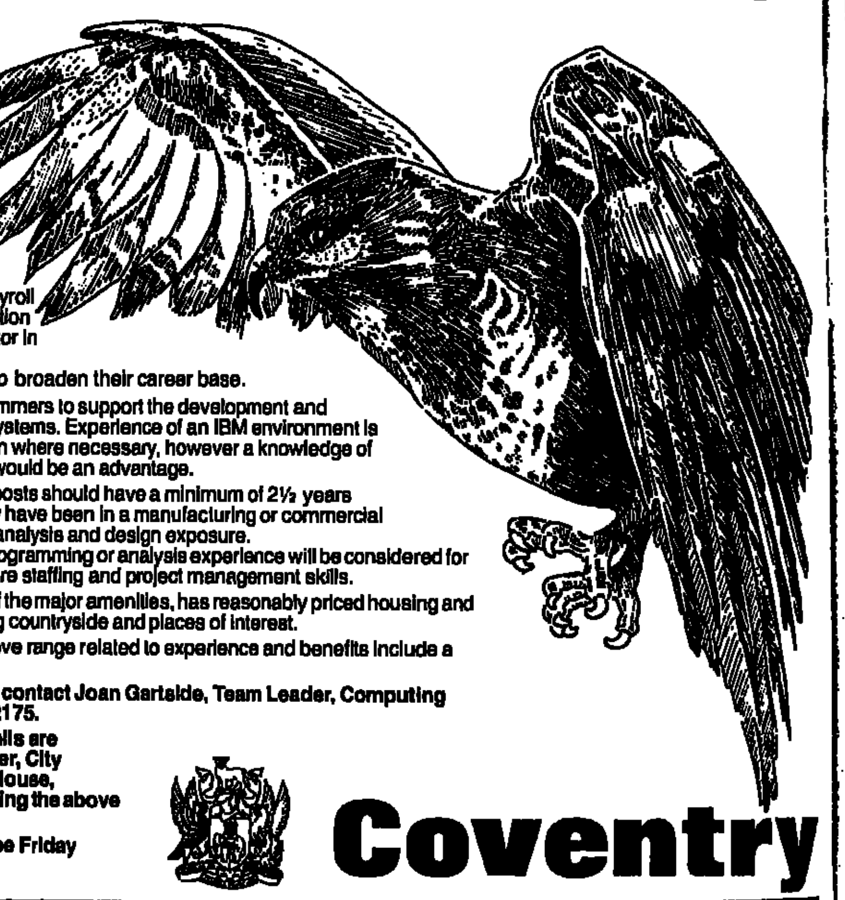

Why not join us in one of the larger IBM installations in the West Midlands? The mainframe is an IBM 3032, with a 3083 processor to be installed later in the year. We have a varied range of applications covering all departments of the Council including the usual commercial applications covering payroll and accounting functions, but in addition applications unique to the public sector in rating, housing, education and social services, giving everyone a chance to broaden their career base.

We require COBOL and ADF Programmers to support the development and expansion of our batch and on-line systems. Experience of an IBM environment is not essential and training will be given where necessary, however a knowledge of MVS, TSO/SPF or IMS/DB and DC would be an advantage.

Applicants for Programmer/Analyst posts should have a minimum of 2½ years programming experience, which may have been in a manufacturing or commercial environment, and be looking to gain analysis and design exposure. Candidates with more than 4 years programming or analysis experience will be considered for the senior posts, which will also require staffing and project management skills.

Coventry is an attractive city with all of the major amenities, has reasonably priced housing and offers easy access to the surrounding countryside and places of interest.

Salaries will be offered within the above range related to experience and benefits include a relocation allowance of up to £1000.

For an informal discussion please contact Joan Gartside, Team Leader, Computing Services Unit, on 0203 25555 ext. 2175.

Application forms and further details are available from the Personnel Officer, City Treasurer's Department, Council House, Earl Street, Coventry CV1 5RR (or ring the above number).

Closing date for applications will be Friday 8th July 1983.

Coventry

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(4150)

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Applications are invited for the post of Programmer grade 1B. The computing unit is well equipped with DEC PDP-11 equipment and a variety of micro-computers. One of the PDP-11s is used as a remote job entry terminal to the University of London network (Ahmdahl V8) and to a commercial bureau database. The work is very varied and the appointed person will work mainly in FORTRAN, BASIC and assembler in a small unit providing medical statistics and scientific support services.

The salary (under review) is in the region of £5,850-£8,065 plus London Weighting Allowance, according to age and experience.

Applications please by letter with curriculum vitae to Dr G. S. King, Institute of Obstetrics & Gynaecology, Queen Charlotte's Maternity Hospital, Goldhawk Road, London W6 0XG.

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Starting salaries are likely to be in the range of **£7,000** to **£13,000** p.a. depending upon experience. Our experienced staff can achieve salaries of **£17,000** and beyond.

Applications are invited from analysts and programmers who have a minimum of 2/3 years experience within large scale IBM environments. A knowledge of COBOL and/or ASSEMBLER is required, preferably on large mainframe IBM equipment under MVS. Experience of large developments with batch or on-line systems using structured programming techniques would be an advantage, as would a knowledge of financial systems, TSO using SPF, and IMS.

If you have a thorough knowledge of Database techniques under IMS, positions of significant opportunity are awaiting.

There is varied, interesting development work embracing many different disciplines and applications. Real career opportunities exist in expanding Data Processing areas.

The remuneration is excellent and includes good basic salaries, a non-contributory pension scheme, paid overtime or flexitime, an annual bonus and Profit Sharing. There are subsidised restaurants at all three locations.

Application forms may be obtained from:

K. J. Colebrook, Manager (Personnel),
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or telephone Knutsford (0565) 3888 Ext 2743, 2744 or 2745.

Initial interviews will be arranged in Cheshire, Northampton and Poole.

BARCLAYS

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logica to £20,000

Logica specialises in information technology. We have built up an impressive concentration of skills in real-time computing, communications and office automation. We have recently been selected by **Computing** as the Company of the Decade in the software industry. Our work ranges from total system implementations to short consultancy assignments. We concentrate on leading edge developments providing staff with varied, advanced and technically demanding work.

To continue our growth, we seek further top-class London based professionals. For the senior positions below, you are likely to have a degree, but more important is a record of achievement in your chosen discipline. We look for commercial awareness, the ability to communicate effectively, and the flexibility and confidence to undertake a variety of work. You will also possess flair, drive and self-sufficiency. All these positions require close working relationships with senior client management.

Capacity Management Consultant

We are seeking an individual to head up one of our fastest growing areas of specialisation. You will possess extensive DP experience in systems programming and applications development ideally supplemented by work on capacity planning, sizing, performance evaluation or system tuning. In addition you should have thorough working knowledge of at least one major operating system.

IBM Systems Consultants

These senior positions require comprehensive IBM system experience covering both mainframes and communications. You will be responsible for conducting a wide variety of assignments including computer strategy studies, system tender evaluations and system design studies involving large networks with IBM (or IBM look-alike) mainframes, database management systems and distributed processing.

Project Managers

We expect strong technical capability, typically on large minis, and the ability to motivate and lead a team. Experience of estimating, resourcing, project planning and control, and project standards are essential. Knowledge of structured design and system productivity aids would be advantageous.

If you are looking for a challenging environment and believe you can contribute to a worldwide successful systems company, please contact Louise Romain, our Recruiting Consultant, on 01-407 2531 (day and evening) or write to her at: Logica Limited, 64 Newman Street, London W1A 4SE.

Louise Romain

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Candidates should have a background in mini/micro computers particularly DEC, INTEL, ZILOG, MOTOROLA etc., and possess at least five years' experience using both high level and assembler languages. A knowledge of Real Time Software, Data Communications or Industrial Automation would be highly advantageous.

The successful candidate will occupy positions of responsibility, including team leadership, with ample opportunity to broaden technical experience. As a thriving and expanding company, Real Time Developments offer competitive salaries and attractive conditions of employment which will include relocation assistance where necessary.

LOCATION: HAMPSHIRE JA 320/1

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to £14,000 + company car

Kenrick Computing Ltd., a member of the Kenrick Group of companies, provide a variety of computer services to commerce and industry. These include package and tailor-made systems, bureau services and total turnkey solutions based on the complete range of Data General computers. Since the company's formation in 1979, Kenrick Computing have seen substantial growth in their client base and now have a requirement for a range of staff from Programmer through to **Project Leader.**

Candidates should have in depth programming skills gained in a mini-computer environment, preferably Data General using Business Basic. A knowledge of production systems would be highly advantageous. The positions involve substantial customer contact and the successful applicants must be able to demonstrate the ability to liaise effectively at all levels.

In return, Kenrick Computing offer excellent salaries and the use of a company car.

LOCATION: WEST MIDLANDS JA 320/2

GOULD *Electronics*

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£ excellent + Company Car

Gould S.E.L. is a world leading manufacturer of 32-bit minicomputers. The software support team plays a vital role in the increasing demand for the company's products. Vacancies exist for **Software Analysts** to expand the team responsible for UK and Northern Europe software support. Experience is required in two areas:

Scientific, Technical and Real Time — applicants should have 4-5 years' experience in a scientific, industrial or Real Time environment and be fully conversant with operating systems and communication software; scientific high level languages and/or assemblers.

UNIX* and 'C' — applicants should have in depth experience of UNIX and/or 'C' and will be involved in a challenging role of pre- and post-sales support of UNIX and its associated products.

We offer excellent salaries, company cars and a range of benefits normally associated with an organisation of our standing.

LOCATION: SURREY *UNIX is a trademark of Bell Labs JA 320/3

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DP Recruitment Services Limited is a leading international consultancy with a commitment to providing quality executive search, recruitment and advertising services. Our continually growing client base includes a wide range of blue chip companies utilising the latest computer technology.

To keep pace with continued growth and increasing demand for our services an additional consultant is now required to join the established and successful permanent recruitment division.

The person we are seeking will have a recruitment agency background, or will currently be working within data processing, and possess the desire to develop their career within a highly rewarding industry. Most important, will be the ability to communicate effectively at all levels in a stimulating but demanding environment.

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TK 320/4

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Candidates for these positions should be able to demonstrate in-depth understanding of the peripheral components of modern high-speed DP systems. Of particular interest are skills in evaluating design and performance features and integrating them into the total system. Preference will be given to candidates with a recognised electrical and/or electronic engineering qualification supplemented by several years practical experience with a sizeable minicomputer manufacturer.

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Telephone our Advising Consultant **Alan Carnell** on **01-935 0671** (24 hour answering service) or **01-486 0877** after hours to arrange a prompt and confidential interview. If you so wish please submit your Curriculum Vitae to him at SCR's London office.

Specialist Computer Recruitment Ltd

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061-833 0427

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You will be a technical authority, providing specialist knowledge in configuring, sizing and tuning VAX/VMS systems. These systems will span Command and Control in civil and military environments, commercial systems and general information processing projects.

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Please telephone JOHN WILLS at IMPC Limited on 01-486 5644 to progress your interest.

(4113)

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- Investment/Portfolio Management
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- Economic Analysis
- Economic Research
- Gilted-Edged Market
- Overseas Investment
- Company Launch

The DP department is now well established, having developed its own standards and structured approach, yet has remained small—about a dozen—friendly and enthusiastic. They use DEC and HP equipment.

In addition to good salaries, a bonus is paid *twice-yearly* and staff are eligible immediately. These bonuses add significantly to individual's remuneration.

Please contact JOAN AINSWORTH on 01-681 8311 or write to her at: C.S.S., 6th Floor, Carolyn House, Dingwall Road, Croydon, Surrey CR0 9XF.

Analyst/Programmer

£10-12,000

Following its planned expansion path, the DP department is now looking for an analyst/programmer of good academic background, able to be responsible for their own part of a project from start to finish.

User contact plays a large part in the day-to-day activities of the department, placing requirements over and above those of technical skills on applicants. These interpersonal skills and an alert mind are more important than particular hardware and software experience, although obviously, any previous experience in the financial sector and knowledge of BASIC+2, would be very useful. If you have 1-3 years' experience and would like to contribute to the further success of DP within the partnership, we should like to hear from you.

Computer Search & Selection (Southern) Ltd

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IBM OPPORTUNITIES

PL/1 PROGRAMMERS — C. LONDON — to £14,000
Major expansion within this progressive company has led to vacancies for all levels of programmers. Opportunities exist within the development teams for applicants with a minimum of 18 MONTHS' PL/1 experience, and up to FOUR YEARS' experience for Team Leaders. Our client retains large IBM mainframes running under MVS, using CICS and IMS, training offered where necessary.

COBOL ANALYST/PROGRAMMERS — LONDON — £12,000
This well-known company offers fantastic opportunities for individuals with a minimum of THREE YEARS' COBOL and some DL/1 experience. The client retains IBM 4341 hardware running under DOS/VSE, they offer TRAINING in CICS, loads of system development work and career progression. You will be involved in new projects and handle the training of junior staff.

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This international company has two openings for career-minded individuals. If you have a minimum of 2½ YEARS' PL/1 experience, and wish to work on a variety of systems, have loads of client contact, and hold a responsible position phone now for further details. Training offered in TP and DATABASE.

COBOL PROGRAMMER — C. LONDON — £10,500
This prestigious firm of merchant bankers based in the city can offer an exciting career move for a programmer with a minimum of 18 MONTHS' IBM COBOL experience. Ideal applicants should be in their 20s, ambitious and looking to progress into analysis. In return the company offers TRAINING in CICS and DL/1 and excellent benefits including subsidised mortgage.

COBOL PROGRAMMERS — LONDON — £11,000
This Central London-based company seeks to recruit two programmers with a minimum of TWO YEARS' COBOL including SIX MONTHS' CICS EXPERIENCE. This prestigious company offers TRAINING in DL/1 and analysis, and a variety of commercial systems. Excellent career prospects and benefit package.

ANALYSTS — LONDON & HOME COUNTIES — to £18,000
We have at present many requirements for ANALYSTS, SENIOR ANALYSTS, and PROJECT LEADERS for some of the largest companies in London and the Home Counties. If you have good analysis skills and are thinking of changing your position — why not call us now to discuss your future career.

(4128)

15 Red Lion Square
London WC1R 4QH
242 9796

Project Leaders Real Time Development

The Next Step?

Thames Valley — £16k + Car

The Company are the world leaders in their field, developing real time control systems. They are an autonomous subsidiary of a major U.S. Corporation, which has world wide interests in the High Technology industries.

Software development is a vitally important part of their operation, and there has been considerable progress within this department over recent years.

The stage has now been reached where we need to recruit a software specialist to lead the software team.

The candidates we seek will have a strong background in software development, seeking to take their next career step into management.

One of the major development areas within the Company is real-time software for PDP11 systems. The Company has its own VAX and PDP11s for this work.

The department is also responsible for developing software from single chip through to 8/16 bit microprocessors.

The successful candidate is likely to be in his/her 20's-mid 30's. A Technical background relative to the systems mentioned is essential, as is the ability to motivate and manage a small team of software specialists with a wide range of responsibilities.

The benefit package is excellent, and full relocation costs will be met, where appropriate.

If you would like to discuss the opportunity further, contact Arthur Hutt, on (0628) 21723.

Harrison Cowley Executive Selection
35 Queen Square, Bristol BS1 4LU
Tel: 0272 36720 (24 hr. answering service).

(4169)

RPG II/III

RPG III TECHNICAL PROGRAMMER — To £11,000

Highly successful financial services company in North West London, seeking a competent Programmer with two years' + RPG II/III experience, and a bias towards the technical aspects of programming. This is a rapidly expanding young company, who can offer an excellent career path to self-motivated individuals. Current systems are being developed on a System 38 model 7, utilising on-line and database facilities. Ref. C/2033

IBM SYSTEM 34 — HERTS — £10,000 +

A major electrical organisation are seeking to recruit an Analyst/Programmer with a minimum of 18 months' RPG II experience. You will be working in a small D.P. Department, directly assisting the D.P.M., and will be involved with maintaining the existing software and developing a new stock control system. Due to expansion the company may possibly upgrade to IBM System 36 or 38 in the near future. Excellent benefits include non-contributory pension scheme and free BUPA. Ref. G/2521

PROGRAMMER — LONDON — c. £8,000

Marketing company in Central London require an IBM System 34 Programmer with 12 months' + RPG II experience, and the ability to learn and progress within their department. As part of a young friendly team you will be developing a range of commercial applications in an on-line environment, and they offer five weeks' holiday, travel loans and lunch allowance. Ref. C/2465

ANALYST/PROGRAMMER — WEST COUNTRY — To £11,000

Superb opportunity with West Country-based software house, for an Analyst/Programmer with two years' + RPG II/System 34 experience. You will be part of a small team, responsible for System 34 and System 38 development, customer support, user liaison and products. Training in RPG III is offered, together with an above average salary, relocation package and excellent career prospects. Ref. C/2523

RPG III — CITY — Circ. £11,000

Leading International Bank wish to continue their expansion drive by the addition of a further Analyst/Programmer. Applicants should have two years' + experience on IBM System 34/RPG II and must be willing to travel to Europe occasionally. You will be working on a variety of Banking applications and embarking on new development projects. A full banking package is offered including a subsidised mortgage. Ref. G/2359

IBM SYSTEM 38 — CITY — To £11,500

Highly successful manufacturing company based in the City require an additional Programmer/Analyst with at least 12 months' RPG III experience. The ideal candidate will be self-motivated and a responsible person, who will be involved with major development, implementation and support. This is an ideal opportunity to improve analytical skills and progress in your career. Excellent benefits and salary are offered. Ref. G/2092

IBM OPPORTUNITIES

TEAM LEADER — CITY — To £13,000

New position within established City finance/shipping organisation, for a programming Team Leader capable of controlling a large-scale on-line programming development team. The project utilises IBM 3033, and mini-computers, with MVS, TSO/SPF, IMS DB/DC, and COBOL, and x25 communication links. You should have a good standard of education, five years' + IBM experience, and database, mini-computer or supervisory knowledge. You will be reporting to a project leader, and it is expected that the department will increase significantly in size this year. Ref. C/2463

IBM COBOL — HERTS — £9,000

Work with a professional team developing a large database system. Initially the emphasis will be on programming but shortly you will be writing your own specifications and dealing with user requirements. The company retain IBM 3031, and 4300 mainframes running under DOS/VSE VM/CMS, with their own TP monitor which is similar to CICS. Benefits are those which would be expected from a multinational organisation and career prospects are unlimited. Ref. G/2089

MOVE INTO ANALYSIS — LONDON — To £10,700

Worldwide oil company in Central London running IBM 3031/3033 with MVS, CICS and DL/1 is offering the opportunity for an Analyst/Programmer to move into a pure analysis role. If you are young, ambitious, well educated and have around two years' IBM COBOL experience gained in an MVS, CICS, DL/1 environment, this is an excellent opportunity to increase your liaison and design skills in a dynamic organisation. Excellent package including health and life insurance, subsidised restaurant, travel loan, etc. Ref. C/2387

ANALYST/PROGRAMMERS — CITY/ESSEX — To £12,000

A well-established systems and software house with offices in the City and Essex require additional D.P. professionals with a minimum of 18 months' experience on IBM mainframes. Applications are mainly of a financial, sales and marketing nature and are all on-line, under DOS/VSE with CICS, although CICS training will be given. Genuine opportunities for career advancement in this young progressive organisation. Ref. G/2285

IBM COBOL — BERKS/MIDDLESEX — To £10,500

There are many excellent positions available in Berkshire, Middlesex and West London for keen Programmers and Analyst/Programmers, in the financial, retail, manufacturing and entertainments area. If you can offer 18 months' to five years' experience of IBM COBOL with either MVS, OS/VS1, or DOS/VSE and preferably on-line or database experience, then call me now for further details of these exciting opportunities. Ref. C/1849

BUSINESS ANALYSTS/PROJECT LEADERS — To £16,000

Due to expansion a large retail organisation are seeking additional Analysts and Project Leaders. The ideal candidates will be graduates, with an IBM background, and preferably with CICS and DL/1 experience. Project Leaders will require strong leadership abilities and good technical background. Business Analysts (junior and senior levels) will be working independently or within small teams, and will deal with problem solving and work through feasibility, systems design and development to successful implementaton Ref. G/2518

OTHERS

HEWLETT PACKARD-COBOL — To £8,500

Excellent opportunity for a Junior HP 3000 Programmer to further his/her knowledge, whilst developing an exciting and sound career. If you can offer six months' + HP COBOL expertise, hopefully but not essentially have utilised IMAGE, VIEW and QUERY then I would like to hear from you. My client, an international Berks based concern, is expanding its European division. You will work on highly advanced development projects, and be called upon to travel abroad. An excellent salary is offered and the package includes relocation. Ref. A/2477

ICL COBOL — MIDDLESEX — £8,000

Commercial organisation currently housing an ICL 2960 running under GEORGE II with 1900 COBOL and FILETAB are currently seeking a Programmer to help support conversion work from ICL to Honeywell mainframe. You should have a minimum of 12 months' exposure to COBOL, FILETAB and GII. Initially you will be responsible for working solely on ICL programs but in 12 months' time you will retrain on Honeywell equipment, and join a fast-moving busy development team. Ref. D/2276

BURROUGHS — SENIOR — £ NEG

Ambitious applicants with a solid BURROUGHS background with either Team Leading or Systems Analysis experience are sought by this Berks.-based marketing concern. You will have the flair and tact to enable you to communicate with Management and Users besides overseeing a team of D.P. staff. The company houses a B1955 on-line using DMS II. Career prospects are above average and almost all work is development based. An excellent remuneration package is offered. Ref. A/2263

ICL ME29 — CITY — To £10,500

This is an excellent opportunity for a Programmer to take up a key position within this well-established insurance company. The company house 2x ICL ME29 running under TME. Applicants should have a minimum of 18 months' ICL COBOL experience, with extensive exposure to TPS. You will play an integral part in user training, coding, design and implementation of a range of insurance and business systems. This is a new position offering career prospects, in house education, exciting development projects, and a pleasant and flexible working environment. Excellent package including subsidised lunches and four weeks' holiday. Ref. D/2452

SYSTEMS ANALYST — SURREY — To £13,000

Large progressive manufacturing company based in Surrey housing an ICL 2958 are seeking an experienced Analyst with at least four years' commercial D.P. experience. You will have spent the last two years working as a Systems Analyst and must be able to demonstrate skills in the manufacturing sector. A programming background is preferred for this position. You will be using TP extensively, and working mainly with real time systems. Full company benefit package including relocation where appropriate. Ref. D 2457

IBM PL/1 — MIDDLESEX — £ NEGOTIABLE

Applications are invited from Analyst/Programmers with two-four years' IBM PL/1 experience, preferably in a commercial environment. The computer is an IBM 4341 running under VM/CMS, DOS/VSE with POWER and using CICS. All new developments are written in PL/1 using on-line facilities. You will be mainly working with development of new systems including production control, order-entry, invoicing, etc. Excellent company benefits including Pension Scheme, Travel Allowance and Subsidised Canteen. Ref. D 2502

HONEYWELL COBOL — c. £9,000

New and expanding London based Honeywell L64 site, invites applications from COBOL Programmers with either IDS or IDS skills. As part of the development team here you will be trained in financial applications. This well-respected professional organisation with 'state of the art' technology, will encourage your progression along their solid career path. AN excellent package is offered to include subsidised restaurant, S.T.L. and discounted insurance. Ref. A/1212

UNIVAC-COBOL/ASSEMBLER — c. £11,000

Enthusiastic Analyst/Programmers, with Univac mainframe experience are required for my Essex-based clients. You will work on Univac 1100 utilising the most up-to-date database and on-line techniques. There is much development work to be done, and this will involve you in analysis work and in user contact. Applications are mostly financial and commercial. Salary will be more than commensurate with experience and company benefits include BUPA, good bonuses and a relocation package where necessary. Ref. A/2059

DEC/PDP-FORTRAN/CORAL 66 — c. £ NEG

Do you have in excess of 18 months' DEC/PDP 11 series experience, preferably using FORTRAN and/or CORAL 66. My client, a London/Surrey-based bureau organisation, would like to meet you. They offer the chance to become involved in exciting development projects, both on and off site, mostly in on line Real time environment. RSX-11-M would be an asset. You will be working as an Analyst/Programmer, meeting and dealing with clients besides development work and installation. Normal large company benefits. Ref. A/1010

MINI-COBOL — MIDDLESEX — £8,500 NEG

Subsidiary company of a large firm of building contractors currently operating a Philips P4500 mini computer with COBOL is seeking an experienced Analyst/Programmer. The machine runs a range of on-line applications including accounting, records and other small business systems. Candidates should have a minimum of two years' experience with a mini Cobol environment and be capable of working from design to implementation. Working as part of a large organisation you will receive many company benefits and good prospects for your future career. Ref. D/2501

ICL COBOL — SURREY — To £9,000 + relocation

Highly successful ICL 2960 site currently in the process of developing new systems are offering interesting work to experienced and enthusiastic D.P. Professionals. In order to achieve this development they are seeking programmers experienced in the use of COBOL and VME. A minimum of two years' experience is required, and any exposure to TPMS and IDMS would be highly desirable, although not essential as full training will be provided. In addition to a competitive salary, they will provide in-house training, and a full company benefit package including a pension and life assurance scheme, subsidised restaurant and four weeks' holiday. A relocation package may be offered where appropriate. Ref. D/2456

UNIVAC-COBOL — c. £9,000 + Mort. subs.

Do you have a minimum of 12 months' + UNIVAC 1100 COBOL experience? Would you like to become involved in development work on a number of varied projects ranging from finance to administration? If so my Hants-based clients would like to meet you. They offer a first class working environment, thus you can develop your career whilst receiving training on a database, on line techniques, and JSP. Full relocation will be paid, a mortgage subsidy is offered, and there are bonuses throughout the year. Ref. A 1589

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For further details and an application form please write or telephone: Mrs. J. E. Stubberfield, Personnel Officer,
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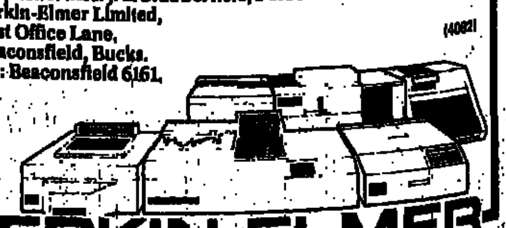

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ANALYST/PROGRAMMER

Bristol — System 34/RPG II

RTZ Computer Services Limited are a leading financial computer software company. An analyst programmer is required in Bristol to work on IBM System 34 developing accounting packages. The person will subsequently progress into a development/support role.

Candidates must have at least 2 years experience with.

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Ref. MB 1/01

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Ref: CRS 1/02

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Ref: MB 1/03

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This is a key and creative role in a highly successful organisation where customer support is paramount. The salary and benefits package reflects this and includes an executive car, non-contributory pension scheme and permanent health insurance.

Ref: MB 1/04

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PROGRAMMER/ANALYST
(£7,404 to £9,025)

An opportunity has arisen for experienced and well qualified applications development staff to join the Computer Department of Grampian Health Board.

A full range of applications, covering financial, administrative and medical aspects of the Board's activities, are currently run on two ICL 2904s, a CTL 8046 and a number of other minicomputers. In the latter half of 1983, the department will take delivery of an ICL 2966 8Mb mainframe on which it is intended to run TP and database (IDMS-X) applications under VME.

Applicants for the Senior Programmer/Analyst post should have at least four years' experience in computing and have held responsibility for the development/support of at least one major application. This is a permanent post.

Applications for the Programmer/Analyst post should have at least two years' experience in programming, have an aptitude for analysis and be able to work effectively with a minimum of supervision.

Experience in one or more of the following areas is desirable:— ICL/CTL hardware/software; Developing TP programs; Database (CODASYL); Richard Pick software

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For further details contact Mr. G. McIntyre, at Grampian Health Board Computing Centre, Westburn Road, Aberdeen. Tel: (0224) 681169. Completed application forms should be returned to the Area Personnel Officer, Grampian Health Board, 1 Albyn Place, Aberdeen by 23rd June, 1983. (4039)

Finance Department

Analyst/Programmer

up to £8,300 (salary award pending)

Applications are invited from persons with at least two years' programming experience using COBOL in an ICL installation.

The Council's computer equipment consists of an ME 29/37 with extensive on-line cash receipting and video networks.

Generous relocation; expenses and housing (subject to availability).

For application form, write to: The Personnel Officer, Council Offices, Fleet, Hants., GU13 8AE.
Or telephone: Mr. Martin or Mrs. Cadge, Fleet 22122, extension 205.

CLOSING DATE: June 24, 1983

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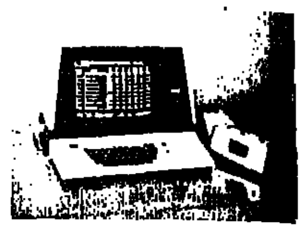

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Contact initially John Wood or Bob Tait

Sales Manager – Turnkey Projects – Director Designate

Experienced top Sales Managers are urgently required, with a proven track record of personal Turnkey sales, able to recruit, motivate and lead an emerging sales team selling to the mini computer base – As such, Business Applications systems knowledge will be required supported by top communication ability and skill. We in turn offer a fully integrated service of Cobol on-line packages, running on Honeywells ultra successful DPS6 mini computer range. We already enjoy significant hardware price advantages in addition to stable products and an excellent reference base. Our packages are the best user solution you will find. Our requirement is for an experience, talented and highly motivated Sales Manager, able to build a team and, with personnel efforts also, ensure early and continuous results. Equally, opportunities will evolve to joint participate with the manufacturers at exhibitions, road shows, etc. We in turn will pay an attractive salary, good commission scheme, and consider equity participation for the successful candidate if a sales achievement satisfactory to the Board, where prospects also exist later, is met.
Contact initially John Wood

Systems Programmers – Honeywell DPS6

We need experienced Honeywell DPS6 Systems Programmers to work on a number of interesting projects including emulation, SNA Networking, terminal protocol development, database systems and T.P. Management Systems. Experience of Honeywell GCOS MOD 400 is required.
Candidates will have client access and a growing position as the company's Turnkey successes increase. Candidates should be well educated to at least HNC/D Level and have a proven track record in systems programming. Ability to produce results in a short time scale with minimum of supervision and direction will be required. We are currently working on and developing a number of major new projects. A driving licence would be advantageous.
Contact initially Bob Tait.

Project Managers – ICL TME TP – Salaries from £11½K, plus Sierra GL

We are seeking a number of top ICL experienced Project Managers capable of developing systems under TME TP for the ME29 sector primarily progressing afterwards to VME and IDMS-based systems. It is an essential requirement to have a minimum one year's experience of TME TP, with at least a further 2 years' ICL experience in 2903/4s or ME29s.

All candidates should be able to demonstrate an in-depth knowledge of System Design, Operating System facilities awareness and have a sound awareness of project planning and project management. We in turn offer the opportunity of working in a centralised, modern Birmingham Data Centre. Equally, you will be working on numerous original developments for a wide and diverse range of clients using inhouse development equipment facilities and our own packages where appropriate. Only a small team currently exist, but current and future commitments will create at least a further 15 positions within the ICL division during 1983 alone. Subsequently, we require the ability to lead and develop new staff and to maintain a constructive and co-ordinated approach towards pressures during a development situation. Considerable personal freedom is given with the opportunity to develop a sound career based upon personal performance and commercially monitored contribution. Relocation assistance will be provided if appropriate for suitable qualified candidates.
Respond initially by telephone or letter to John Wood

A. Progs & Cobol Progs

8K to 10K

ICL TME Cobol Programmers

We urgently require a number of experienced programmers to contribute both towards package development and enhancements and to work on original development projects for Order Processing, Purchasing, Manufacturing Systems and Stock Control. Candidates must have a minimum of three years' ICL Cobol experience and be capable of undertaking development tasks to agreed timescales and with a high degree of accuracy. Good career opportunities exist in a small, but rapidly developing team with a larger Turnkey and Facilities Management Group environment. Additionally, involvement in our Package development activities will generate wide and varied career interest with client involvement at regular periods.
Contact Don Walkiate or Bob Tait

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(4138)

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LONDON AND THE HOME COUNTIES

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To £20,000 PACKAGE

Due to a policy of carefully controlled growth, these clients require a number of additional members of staff this year. They have been extremely successful in designing and installing systems based on the IBM GSD range and require some RPG experience (any machine) together with a flexible, mature, and professional approach. Superb opportunities are offered, working with Blue-Chip customers.

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CICS TRAINING £10,000+

This is not an idle promise FACT!! This well-known stockbroking company WILL train the right person in CICS if you have around two years' COBOL programming experience gained in a large IBM environment. Some exposure to On-Line systems would be an advantage but is not a pre-requisite. This is an ideal opportunity for someone working in a large batch environment, and would like to move into a more technical and demanding position.

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PROGRAMMER c.£8,500

A developing company require a young and ambitious COBOL/BASIC programmer to complement an existing efficient team, based in the West End. Currently using DEC and VAX the candidates will need to be familiar with financial and payroll systems. A minimum of 18 months' experience is required. This is an exciting and useful area in which to work. Benefits include Life Assurance, Pension, Season Ticket Loan, etc. Please contact MARSHALL CLIGMAN at our London office.

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MIDLANDS

GSD ANALYST/PROGRAMMER

OXFORD c.£10,000

A leading manufacturer in the light vehicle industry, is seeking a mature Analyst Programmer for their new installation, with experience of RPG II on an IBM S34. Major developments are being undertaken in the area of manufacturing systems and we are looking for a sound Programmer with good analysis and communication skills. Relocation expenses will be considered.

ANALYST

COVENTRY c.£10,000

Our client is a leading Software House in the Midlands. Due to continued expansion they require to take on another support Analyst. You should be able to demonstrate good Analysis experience on Integrated Mini computer systems with some experience of BASIC however limited. Prospects with this company are excellent.

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SUTTON COLDFIELD c.£8,000

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PROGRAMMER

COVENTRY c £7,500 + Car

We are looking for several COBOL programmers with two years'+ experience. You should come from either a manufacturing environment or a Software House and have experience of Integrated Mini computer systems. The company has an overflowing order book, and several fringe benefits are offered in addition to the salary.

For a discussion outside of office hours, 'phone 0757 280748 or 01-995 3619. Messages regarding Midlands-based positions can be left on 021-622 3834.

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(3337)

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You should preferably have used Database skills and have designed TP systems, in an IBM environment, and you must also be able to offer detailed knowledge of Bill of Materials, Requirements Planning and Production Control Systems.

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University of London Computer Centre

Networks and Communications Development

The University of London Computer Centre provides computer services to university users throughout the country. The Centre is equipped with several large CDC computers and has recently installed a 16 MByte Amdahl 470/V8 and a Cray 1S vector processor.

The Networks and Communications Department is developing a new front-end system to provide access to the Centre's facilities from a large number of remote batch and keyboard terminals and to handle the Centre's connections to public and private X25 wide-area networks. The implementation is based on the use of standard protocols conforming to the principles of Open Systems Interconnection.

The Department has two vacancies in an exciting programme of advanced telecommunications development on the front-end system, high-speed local area networks and micros. There will be opportunities to work on both hardware and software.

Candidates should be familiar with modern data communications techniques and should preferably have some experience of hardware design and programming. Relevant academic qualifications to degree level will be required.

Salaries will be commensurate with age, relevant qualifications and experience, within the range £7,496-£15,311, inclusive of London Weighting.

Enquiries should be addressed to the Assistant Secretary, ULCC, 20 Guilford Street, London WC1N 1DZ (telephone 01-405 [illegible], ext. 341).

Applications close two weeks from the date of the advertisement.

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£9,966-£10,626
(Includes anticipated salary award and allowances)

This new post has arisen due to an increase in the Council's computing activities.
The Council operates an I.C.L. 2946 which drives a number of on-line terminals and systems and has a considerable forward development programme.
The successful candidate will join an energetic team and will be required primarily to assist in the development of new and revised systems. Experience in RPG2/COBOL on-line programming is essential and knowledge of I.C.L. operating systems will be an advantage.
Situated in pleasant countryside, Yeovil is convenient to both Bristol and Exeter. Financial assistance towards relocation expenses up to £1,600 and housing accommodation will be available in approved cases.
Application forms and further details can be obtained from The Personnel and Management Services Officer, 91 Preston Road, Yeovil, Somerset BA20 2DP. Telephone: Yeovil (0935) 75272, ext. 33 or 66.
Closing date: 1st July, 1983.

(4122)

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**UNIVERSITY OF EDINBURGH
EDINBURGH REGIONAL
COMPUTING CENTRE**

ASSISTANT COMPUTING OFFICERS (3)

The Computing Centre has vacancies in its Compiler Development Group for two Assistant Computing Officers and in its Communications Group for one Assistant Computing Officer.

The Edinburgh Regional Computing Centre is responsible for providing a range of computing related services to users in the University of Edinburgh and to a number of Government funded research institutes around Edinburgh.

The Compiler Group's primary responsibility is for the development and support of a number of compilers for the central service provided by the Edinburgh Multi-Access System on ICL 2900 hardware. The group is becoming increasingly involved in the provision of compilers for smaller distributed systems.

The vacancy in the Communications Group is for a person to work on the development of the University's data network. This network includes an extensive low speed wide area network run via telephone lines but also includes a high speed Cambridge Ring. It is expected that an Ethernet will be installed by the end of the year.

Applications are invited from recently qualified graduates in computing or final year undergraduates. The appointments will be on the Assistant Computing Officer scale, £5,550-£8,665 (under review), plus superannuation.

The Compiler Group appointments will be for a fixed term of four years in the first instance and the Communications Group appointment for a fixed term of three years in the first instance.

For an application form and further details, contact The Secretary to the University, Old College, South Bridge, Edinburgh EH8 9YL (quoting Ref. 7020), to whom completed forms should be returned by June 30th, 1983.

(4000)

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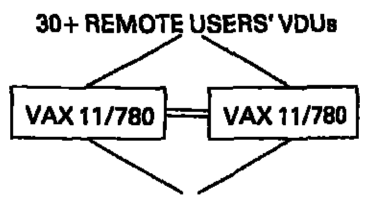

If you wish to work on interesting projects with up-to-date equipment, and have at least 1 year's programming experience, contact Mike Shore or Graham Thorpe on Littlewick Green 2166 or write for an application form to Mrs Pam Polak at Southern Electricity House, Littlewick Green, Maidenhead, Berks. SL6 3QB, quoting 15/83 by not later than July 4, 1983.

(4068)

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Following the initial development, the successful applicants will be expected to support the system throughout Sperry. This will necessitate a certain amount of international travel.

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ICL VME COBOL
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(4203)

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The successful applicant must have had two years' experience of Systems Analysis and Programming using R.P.G. II and be between 28 and 40 years' of age.

A bachelor status contract is being offered extending two years' and is renewable.

Free accommodation with leave periods three times per year plus free air tickets to the UK for each leave period.

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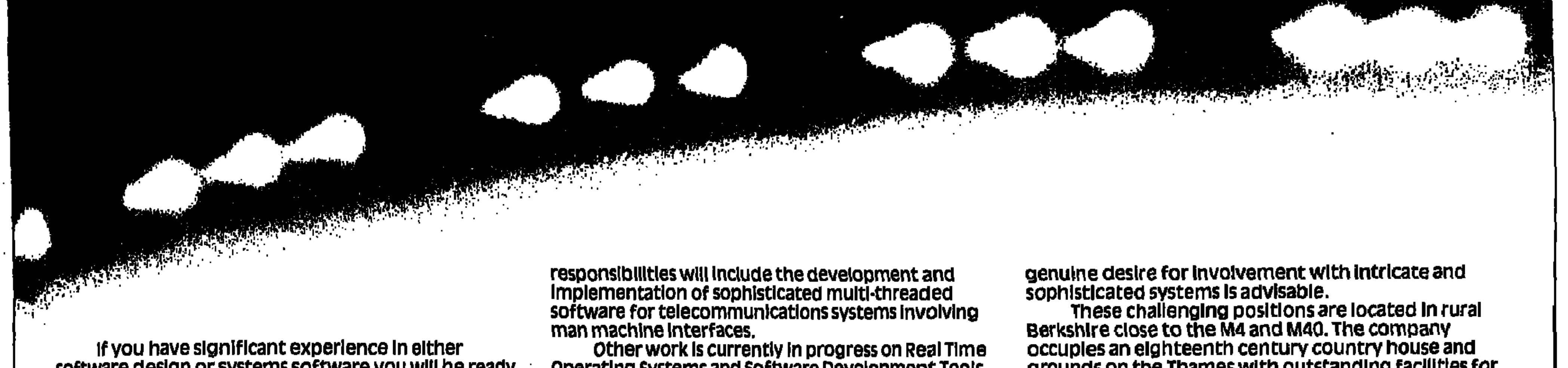

If you have significant experience in either software design or systems software you will be ready to explore the opportunities offered here.

The company, part of a large communications system organisation, has recently been described as one of Britain's star industrial performers, with an outstanding future.

Opportunities exist for a number of Software Engineers at Principal and Senior Engineer levels. Initial responsibilities will include the development and implementation of sophisticated multi-threaded software for telecommunications systems involving man machine interfaces.

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Please contact JOAN AINSWORTH on 01-681 8311 or write to her at: C.S.S., 6th Floor, Carolyn House, Dingwall Road, Croydon, Surrey CR0 9XF.

Senior Analyst/Programmer

to £17,000

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Analyst/Programmer

to £11,000

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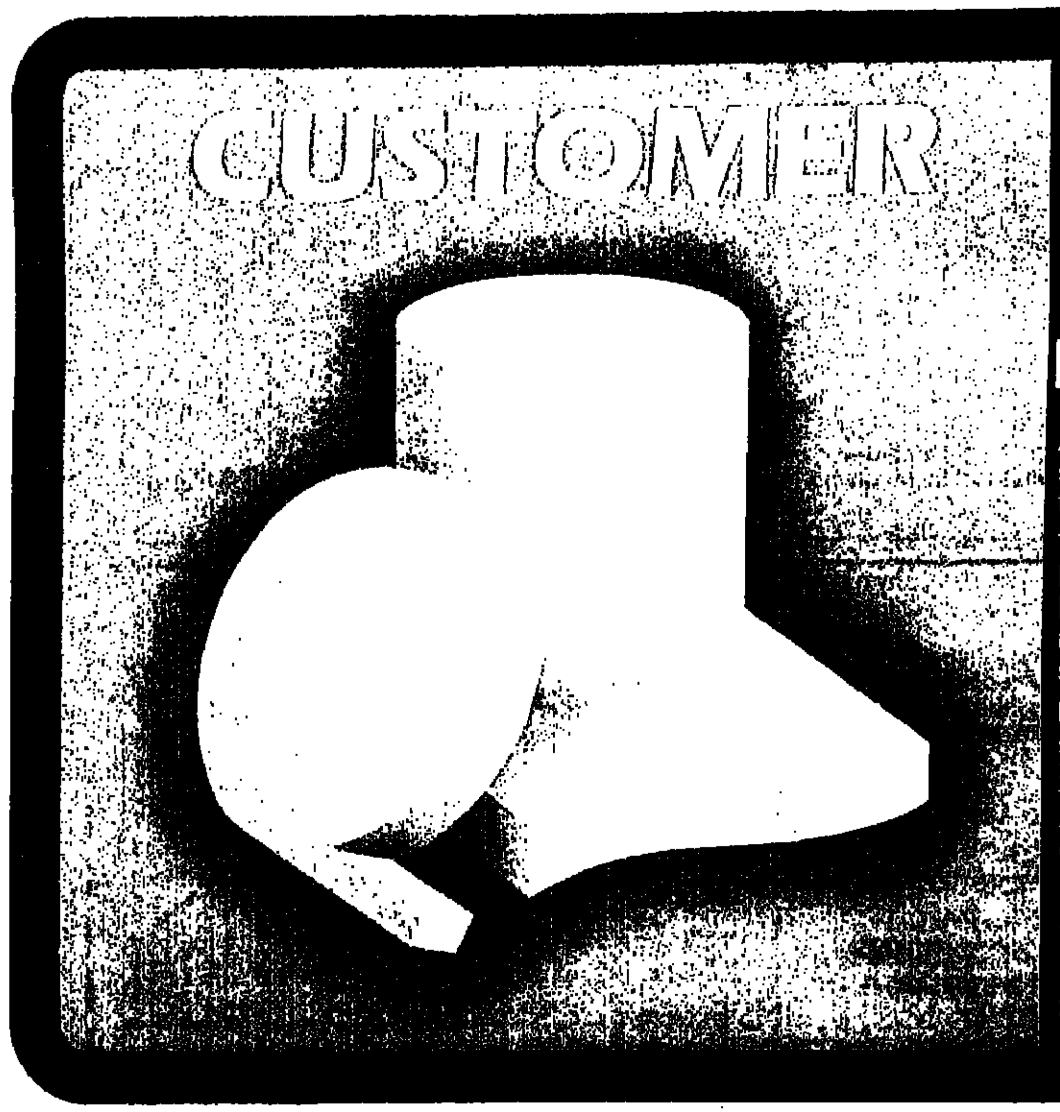

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(4161)

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Salary on scale £8,055-£8,949

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To participate in the design, production and implementation of systems and applications software. It may be possible for an appointment to be made at Trainee level. Applicants should possess an HNC in a relevant discipline and a knowledge of High Level Languages. The preferred languages are Fortran, Basic, Cobol and Pascal.

Salary on scale £5,682-£7,791 (for both posts).

Application forms may be obtained from the Administrative Officer (Personnel), Napier College, Colinton Road, Edinburgh, EH10 5DT.

Closing date for applications is 24 June, 1983.

(4003)

SYSTEMS ANALYST

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CENTRAL LONDON Up to £12,000

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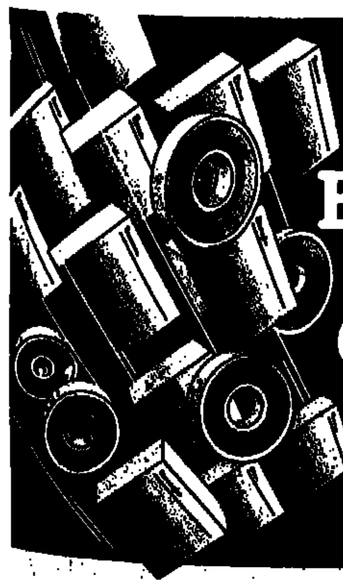
- creative work on varied projects, with a good proportion of development on mainframes, minis and micros, entirely in the London area
- extensive use of modern database techniques, on-line and communications systems
- positive prospects of an on-going career, with opportunities for further advancement
- formal training in up-to-date techniques to enhance your skills

Our clients are looking for a competent Systems Analyst, who could come from any applications background. Upwards of two years' analysis experience is required, alternatively our clients will consider an Analyst/Programmer who seeks a move to pure analysis.

Please ring us for a confidential talk, quoting reference 151, or leave a message on our answering machine after hours.

(4150)

EDP SYSTEMS 01.637 5796
52-53 Margaret St. London W1N 7FF



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ENGINEERING THE NEXT GENERATION OF SYSTEMS SOFTWARE

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COMMUNICATIONS: to develop datacom software for all products and define future networking strategy, the emphasis being on the use of standard interfaces (SNA, X.25 etc).

OPERATING SYSTEMS: developing microprocessor-based real-time systems for the document processors of tomorrow.

COMPILERS/LANGUAGES: providing software based on standard high level languages to support application programme development and to help define our future strategy in this area.

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In addition to highly attractive salaries, benefits include share purchase plan, pension and life assurance schemes and an excellent relocation package to this high amenity location where housing is readily available and reasonably priced.

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If you'd like to hear more about our future and how you could fit in at Burroughs, 'phone Frances Hill, on Livingston (0506) 414111. Alternatively write to her with full details or for an application form:
Burroughs, Simpson Parkway, Kirkton Campus, Livingston, West Lothian.

Burroughs

(4087)

CONTRACT ASSIGNMENTS

[illegible]

Programmers	COBOL CICS DL/1	Immediate starts
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Database Analysts	CICS and DL/1	Immediate and future starts all areas
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Programmers	8100 DPCX ASSEMBLER	London/ Home Counties
Systems Programmer	MVS Long-term	Central London
Systems Programmer	VM CMS	Midlands Immediate
Progs & Anal/Progs	IBM Systems 34 and 38	All areas
Progs & Anal/Progs	COBOL with JSP IMS	Midlands and South
Progs & Anal/Progs	PL/1 with JSP IMS	London
Database Analysts	IMS Experience DB/DC	All areas
Anal Progs	COBOL RPG 2 CICS	London area
Programmers	IBM DOS COBOL/ASSEMBLER	London
Programmers	PL/1 MVS Total	August start–West
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OTHER EXPERIENCE

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All levels	UNIX and 'C'	Immediate/July/August
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[illegible]

PROJECT MANAGER
[illegible]

SENIOR ANALYST & 2 PROGRAMMERS
[illegible]

SYSTEMS PROGRAMMER, CONSULTANT
[illegible]

PROJECT LEADER
[illegible]

PROGRAMMERS, ANALYSTS PROJECT LEADERS
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1A Kiln House Yard, Royston, Herts
Tel. 0763 47161 (24 hrs)

ANALYST/PROGRAMMER WANG VS80

Position in The Hague, Holland

The person appointed will be required to take charge of new developments on a recently installed system.

The appointment is initially short to medium term on a contract basis with a distinct possibility of extension to long term for the right candidate.

Previous experience of WANG VS on COBOL/RPG/BASIC applications and WANG WP (including decision processing) is a requirement and a background in an engineering environment would be an asset.

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The successful applicant will be required to provide specialist support to the Director and his Senior Staff in connection with all computer requirements and will also be responsible for the implementation and management of a computerised stock control and order processing system; and the development of further similar computer applications both within the Purchasing and Supplies Department and in other Departments of the Authority.

Applicants should preferably hold a relevant qualification, have some systems analysis and programming experience in BASIC PLUS and be conversant with Local authority organisations and procedures.

APPLICATION FORMS, RETURNABLE BY 1st JULY, 1983, AND FURTHER DETAILS MAY BE OBTAINED FROM THE DIRECTOR OF PURCHASING AND SUPPLIES, KENT STREET, LIVERPOOL L1 5AN (051-709 5001 EXT: 48) BY SENDING A STAMPED ADDRESSED ENVELOPE.

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CITY OF Liverpool (4154)

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Applicants must have Honours degree in Maths, Computer Science, Engineering or relevant Scientific subjects with experience of FORTRAN IV or FORTRAN 77. At least one to three years' experience of the above programming languages is required for the experienced positions preferably gained on IBM mainframes with TSO/SPF. There are also positions for those with experience of Hewlett-Packard 9845 desk top computers.

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With the ability to work in a dedicated development environment with an awareness of commercial DP concepts since as users acquire new software the team will increasingly take on client support and problem-solving role.

Technically the potential candidates should have in-depth familiarity with assembly languages (preferably in Intel products) CP/M and MS DOS. Unix and C would be an added advantage.

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To design and develop microcomputers using digital electronics and state-of-the-art technology.

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Support Analyst Programmers

"Up to £10,000"

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We are situated in the Thames Valley only 21 miles from London, with excellent road and rail communications and within easy reach of some of Britain's most Scenic areas including Windsor and the Chilterns.

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ADS (Computers) Limited
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Tel. Slough (0753) 75167

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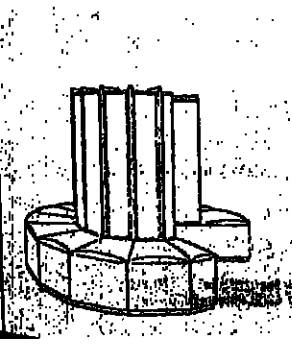

Please phone Michelle Green on 0734 791180 for an application form or write to John Fleming, Software Manager, Cray Research (UK) Ltd., Seymour House, The Courtyard, Denmark Street, WOKINGHAM, Berkshire, RG11 2BB.

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IBM System 38 **SOUTH COAST**

Our clients, an international publishing company, wish to recruit **ANALYST/PROGRAMMERS** for their developing installation on the south coast at **BOGNOR REGIS.**

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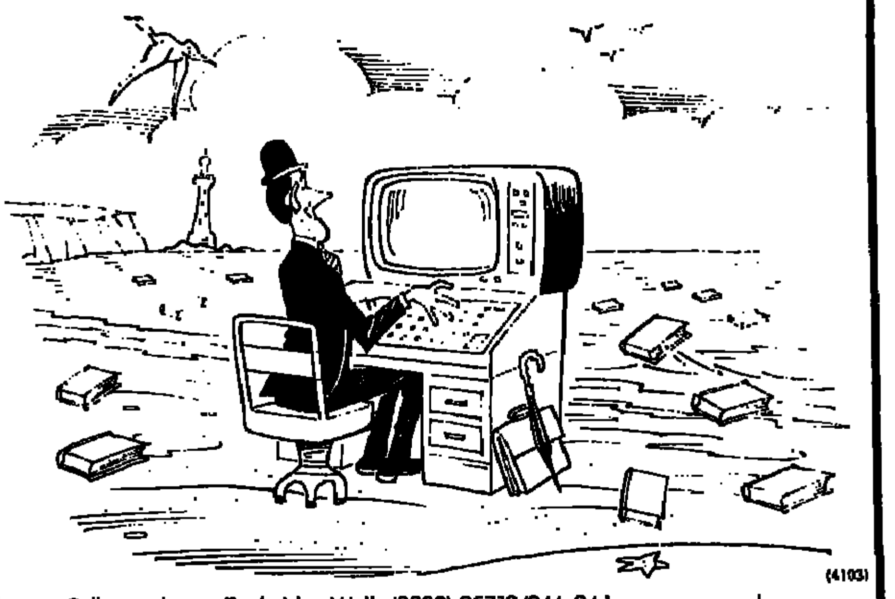

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calma
USA

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Software Engineers

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Analysts

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Previous experience of training is not necessary, though strong communications skills and a genuine interest in people are the attributes we value most highly. Within this varied lifestyle, you will also be able to develop your own technical and personal skills.

Currently we seek experienced Analysts to join our expanding London office.

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MINI & MICRO PROGRAMMERS SURREY £7000-£12500

We currently have five clients with a total of nine positions in the Surrey area. If you have a minimum of 18 months' COBOL or BASIC experience on any mini or micro please contact us NOW. These vacancies offer an excellent opportunity to broaden your D.P. experience on new machines and become more involved in analysis work on Commercial systems. REF SF/CW.

HONEYWELL LEVEL 64 SYSTEMS & PROGRAMMING MANAGER To £13000 TECHNICAL SUPPORT PROGRAMMER OXFORDSHIRE To £10000

Following a Consultancy study of their D.P. systems, our clients are implementing a major redevelopment of all systems. A TP and Database distributed environment is planned with two key people to control it. A Systems & Programming Manager is required to take control of a small but expanding department, and a Technical Support Programmer to cover Operations/Programming support. Candidates for both positions should have a sound knowledge of LEVEL 64 with TDS. In addition experience of BTNS, TAILOR, TDS GEN is required for the Tech Support position. REF MN/CW.

PROGRAMMERS & ANALYST/PROGRAMMERS CITY To £10000+

Major banking organisation are currently expanding and are looking for 12 months + COBOL experience. Present kit is IBM 4300 under DOS/VSE. CICS training will be provided and a Database is soon to be introduced. Excellent career prospects for ambitious people and a very attractive bonus scheme on top of the normal bank benefits. REF MB/CW.

PRE- & POST-SALES SUPPORT CENTRAL To £14000 + Bonus

Our client, a large Software House is seeking a Senior Database Analyst Programmer and Analyst Programmer. The job involves the design (through to implementation) of on-line Database systems and you would be working in small professional teams covering various projects. Although not essential, knowledge of FOCUS RAMIS and Inquire would be very helpful. An IBM MVS/TSO background is preferred, with COBOL and/or ASSEMBLER languages. These positions offer considerable career opportunities within a sound technical environment. REF SR/CW.

ICL PROGRAMMERS LONDON & S.E. To £15000

We have various excellent career opportunities to work for either Software Houses or End-Users in COBOL on 2900 kit of all sizes from 2903 to dual 2966s and larger. Clients are particularly seeking VME/B skills with TP and/or Database experience. Please call for details. REF MN/CW.

PROGRAMMERS & SYSTEMS PROGRAMMERS SUSSEX COAST To £11500

If you want to get involved in the large scale development of Communication Systems then this will interest you. Our clients, a multinational organisation, are seeking able, self-motivated people to fill the above positions. You will have had Real-Time programming on MICROS, and any exposure to INTEL, VIDEOTEX OR TELETEX would be a definite advantage. The employment package includes relocation assistance and usual large company benefits. REF SF/CW.

SYSTEM 38 ANALYST/PROGRAMMERS LONDON To £15000

Two positions exist with this expanding Manufacturing company. Exposure to RPG3 and MAAPICS is preferred, but for the Senior position man-management potential is essential. At least 3 years' GSD experience is needed for the other position (to £11500). Excellent career prospects and benefits package REF MB/CW

PDP TO IBM MIDDLESEX £9000

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MVS COBOL MIDDLESEX £8000 to £11000

This major Computer Services Company has several vacancies at the Analyst Programmer level and will train Programmers in Analysis techniques. They run various large IBM mainframes (with a 3081 recently installed) and require upwards of two years OS COBOL on any applications. The company is fully committed to the development of CICS systems and ANY TP or Database experience would be advantageous, although full training will be given where necessary. Minis and Micros also play a large part in the work, and associated exposure to these would also be helpful. Prospects are excellent, and large company benefits will apply. REF SR/CW.

WANG VS ANALYST PROGRAMMER N.W. LONDON £9000-£11000

Here is a great opportunity to use your experience to the full with this rapidly expanding Commercial Business Systems company. This company are seeking an enthusiastic Analyst Programmer to cover all aspects of installing computer systems. The work is interesting, varied and involves all aspects of systems development, including working with clients from feasibility through to implementation. You will need a minimum of 12 months' WANG VS experience, using either BASIC or COBOL. An excellent remuneration package is offered together with very good career prospects. REF SF/CW.

UNIVAC ANALYST PROGRAMMERS KENT To £11000 + mortgage

This Financial establishment is currently developing systems of 1100 kit using TIP/DMS, and requires experienced 1100 people to join their team. Systems are all TP/Database, using a 150-screen network. Interesting work, with excellent career prospects. Salary and benefits package. REF MN/CW.

RETRAIN TO RPGIII CITY To c£8,000 + BENEFITS

A Bank in the City have recently upgraded to System 38 and require a competent RPGII Programmer to retrain. All normal bank perks are available and this position has sound career prospects. Minimum of 12 months RPG2 experience required. REF MB/CW.

ANALYST/PROGRAMMER SURREY £8000-£11000

DEC PDP 11 site using BASIC + under RSTS/E is seeking experience of Commercial Systems for position involving development of Sales Marketing Systems. You will be either a DEC Analyst Programmer, or a good Programmer ready for Analysis and responsibility. REF JH/CW.

IBM SYSTEMS ANALYST CENTRAL To £11000

This International Organisation require an Analyst with a technical background (COBOL, CICS, DL/1 used on IBM 4300 under MVS) and experience of Commercial systems. The position would suit a good Programmer or Analyst Programmer wishing to progress into Analysis without losing their technical involvement. Large company benefits and a progressive career path exist for a go-ahead person in this well-organised D.P. department. REF SR/CW.

MICRO ANALYST PROGRAMMER CENTRAL LONDON c£8500

Our clients, a household name in the Entertainments Industry, are expanding their D.P. facilities and are looking to recruit a responsible Analyst Programmer. They currently run a large network of micros, and the successful applicant will be involved in the development of new systems, improving existing systems, evaluating new software and generally assisting in the day-to-day running of the network. You should have 18 months' general systems experience gained in a MICRO BASIC CP/M environment. A challenging position, offering excellent salary and benefits include STL and free lunches REF SF/CW

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Our client, a Financial Institution, requires staff from 18 months' programming experience to Senior Analyst level where project experience from start to finish is necessary. Insurance or Financial applications would be preferred, and knowledge of ANY TP monitor would be advantageous. Kit used is IBM 303X range, under MVS in a full on-line environment. Full relocation, free insurance, pension, lunches are some of the benefits provided by this large organisation. REF SR/CW.

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(4141)

Attractive careers for skilled computer people

John Charlton looks at the effects of the recession on jobs in the North

There are still attractive vacancies at Greater Manchester Passenger Transport Executive, which claims to pay better than average salaries.

GONE are the days when northerners found work in mills and mines: now computer installations are among the few places offering attractive careers, but only for those who can offer relevant skills and experience.

More than most regions, the North has suffered at the hands of the current economic depression. Although the data processing industry has coped remarkably well with the problems thrown up by the current stagnation in the British economy, it has not been unaffected. And as far as job opportunities go, the market for computer staff is certainly not as buoyant as in the South.

As Brian Johns, operations manager for Tyneside software house Compower, puts it: "Firms in this area (the North-east) have been, and still are, having a hard time. Naturally this has had an adverse effect on our business, and we're not planning to recruit now or in the near future."

Another side to this picture is one that is perhaps more pleasing to data processing managers, and that is a slowdown in staff turnover.

This phenomenon is confirmed by Terence Weatherall, production manager for Leeds software house Data Science's International, who says: "We have very little staff turnover now. Two or three years ago staff were regularly changing jobs. Now they're staying and not risking a move. No one has resigned from our operations department for over two years."

But, of course, there are jobs to be found in the North, especially if those seeking them have good skills and wide experience.

Weatherall says: "We are looking for a consultant experienced in systems design, especially in the commercial sector. He will be responsible for implementing systems, and will spearhead one of our project teams. The salary for this post is attractive but subject to negotiation."

Data Science uses an ICL 2956 running under DME.

At Spectrum Computer Services in Bradford the call is for experienced programmers, although trainees are also taken on at regular intervals.

Simeon Crowther, Spectrum's micro manager, says: "We will more than likely be recruiting some programmers in the near future. I anticipate there will be vacancies for two to three experienced Cobol programmers.

"In addition we are looking for Basic programmers to work on the microcomputer side of our business.

"We tend to recruit a couple of people every month, and we do take on Tops trainees. Most of these come from CDI (Control Data Institute) and KBS. Salaries range from £4,000, for a junior programmer, to £14,000 for very experienced personnel."

Spectrum possesses a wide range of mini- and microcomputers, including a Nixdorf 820/35, three Commodore 8000s, and a recently acquired Hewlett-Packard mini. The bureau employs 120 staff.

On the other side of the misty Pennines, there are some attractive vacancies at the computer installation of the Greater Manchester Passenger Transport Executive (GMPTE).

In the groves of academe demand is for software people with very special skills

Its DP manager, Bill Drynan, says: "We have openings for three systems designers and two Cobol programmers. One programmer should have two to three years' experience, the other about one year. The systems designers should have been in the DP industry for five years, and possess analysis and design experience.

"It has been a lot easier to find staff recently, certainly better than in the past. We take on about five trainees per year, and normally we look for young people with a minimum of two A levels and the right sort of attitude and enthusiasm.

"I would say that we pay our DP staff salaries which would fall into the upper quartile of the average for this region. We like to feel that we pay better money than the average installation."

The GMPTE uses two IBM 4341s, a DEC PDP 11/70 and a DEC Vax 11/780.

Down in the groves of academe the demand is for those software people who have very special skills. The University of Manchester Regional Computer Centre (UMRCC) is a powerhouse of innovation, using some very large beasts indeed, including two CDC 7600s and a CDC Cyber 170/730.

Technical director John Clegg says: "I believe that there is a constant demand for programmers in this area. The section where we have greatest demand is for people who can write communications and network software.

"Such people can expect to be graded at a reasonably senior level and receive the appropriate remuneration."

Apart from its CDC monsters, UMRCC also has a number of ICL machines: four 7903s, one 7905 and one 1906. A fair number of operating systems are employed including the evergreen George III.

United with UMRCC in the demand for scientific software people in Manchester is Ferranti, which has two installations in Manchester, the larger located in Wythenshawe, with the other in Moston.

Richard Town, Ferranti's Manchester DP recruitment agent, says: "Ferranti is looking for software engineers. Basically, it is interested in those who have specialist skills and who have a good knowledge of various high level languages, especially those who are expert in Coral 66.

"The firm also has vacancies in Manchester for software staff who have experience of image enhancement and signal processing. Ferranti is not seeking the normal data processing type programmer – it is more interested in those with a specifically scientific background.

"Every year the company recruits people direct from the universities via its graduate entry scheme. The number of graduates taken on varies from year to year. Ferranti takes on in particular, graduates with engineering, physics or mathematics degrees."

Naturally, most of Ferranti's Manchester hardware is of its own manufacture. Its Wythenshawe list consists of three Argus 500s, two Argus 700Es, two Argus 700s and a number of other Argus type computers. The Moston site enjoys the services of a Burroughs B1985 and a Burroughs B1955.

Salaries for computer staff at Ferranti's Manchester installations range up to £14,000.

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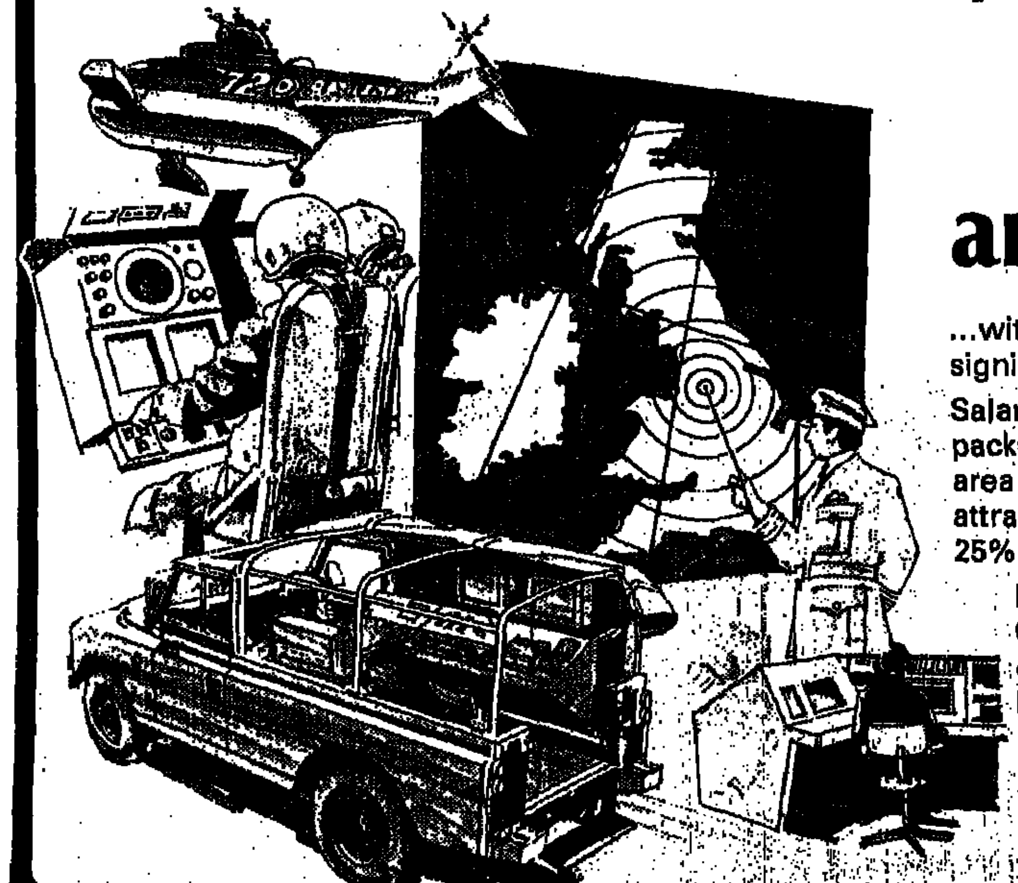

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Hotline...for an informal discussion please contact **Colin Roberts, Career Development Manager, on 061-428 0771 during office hours, or write to Colin at Ferranti Computer Systems Limited, Bird Hall Lane, Cheadle Heath, Stockport SK3 0XQ.** (4085)

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INTERNATIONAL COMPUTER CONSULTANTS
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. . . in the North of England and Scotland who are available now or in the near future are invited to contact me, Peter Moore, to discuss a variety of interesting contract assignments. Our current requirements include analyst/programmers with:

- IBM PRI COBOL
- UNIVAC 1100
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(4119)

Ferranti Computer Systems Ltd.
Cheadle Heath Division

Software Manager

...for hazard monitoring and security systems

Manchester

Major system sales associated with the North Sea Oil and Gas industry have created this key appointment which carries responsibility for the development of software in the areas of hazard monitoring and security systems.

The post will appeal to software specialists with a proven track record in the management of the design and implementation of software for sophisticated multi-microprocessor systems. Previous experience in fire and gas detection, emergency shutdown or security systems would be advantageous.

Salary of up to £14K is negotiable but will depend upon depth of relevant experience. Comprehensive benefits include relocation assistance, where appropriate. The Cheadle Heath Division is located on the northern edge of the attractive rural Cheshire plain, close to major road and transport networks and within easy travelling distance of Manchester.

Initial applications should be made by telephoning Colin Roberts, Career Development Manager on 061-428 0771, or by writing to Colin with brief career and personal details, quoting reference FY/23. Ferranti Computer Systems Limited, Bird Hall Lane, Cheadle Heath, Stockport SK3 0XQ.

(4145)

This appointment is open to men and women.

FERRANTI
Selling technology

Senior Consultant

Software Products Scheme Manchester

We have a vacancy for an experienced computer professional to join an existing team involved with the evaluation of proposals under the Software Products Scheme which is administered by NCC on behalf of the Government.

We are looking for a sound computer background with substantial software development/support experience plus expertise in aspects of software development such as databases/communications/languages. In addition candidates will have the maturity and personality to deal with staff at a senior level in the computing industry plus the drive and initiative to respond to tight schedules and commercial pressures.

Whilst the post is Manchester based, some travel and work away will occur on a regular basis.

Starting salary – dependent on experience in a range rising to £15,100.

Conditions of service are good and include 25 days holiday plus 10 statutory days, contributory pension and life assurance schemes, help with relocation expenses.

Applications please to: The Personnel Manager, The National Computing Centre Ltd., Oxford Road, Manchester M1 7ED
(or ring 061 228 6333 for an application form).

NCC
The National Computing Centre

WHESSOE TECHNICAL & COMPUTING SYSTEMS LIMITED

wtcs

Whessoe Technical and Computing Systems Ltd., has been, for many years, a major supplier of high quality software and services in the field of engineering design and CAD/CAM and have a vacancy for a

ANALYST/PROGRAMMER

The person appointed will be expected to participate in the general areas of information and documentation control, and production and project planning, currently under development and enhancement on the WTCS DEC mainframe systems. He/she will, additionally, be involved in developing applications packages for DEC microcomputers, specifically the Professional, in the areas of business finance control, administration, stock control, etc.

The likely age range of suitable candidates will be 21 to 28 years and who have obtained a Degree in Computing or a Degree or equivalent in any relevant subject plus programming training or experience.

Please send for an application form stating Ref. No. 21 to Manager, Personnel Services, Whessoe Heavy Engineering Limited, Brinkburn Road, Darlington, Co. Durham.

Closing date for applications: 30th June, 1983.

(4173)

DEPARTMENT OF ENGINEERING
ENGINEERING SERVICES DIVISION

Engineering Analyst/ Programmer

Post Reference: E2115 **Grade AP4/5**
Salary £6873-£8325

Required to work in the Department's Computer Section. The work involves developing new programs and adapting existing programs to support the engineering activities of the Department which include highway design and maintenance, structural engineering, traffic engineering, transportation and engineering management. Analyst/Programmers are in regular contact with potential and existing users of their programs.

The Department uses microcomputers, a computer graphics system and a variety of keyboard and batch terminals to the County's dual ICL 2966s and to other computers.

Applicants should be qualified by an appropriate degree or HND, suitably experienced including facility in a high-level technical language.

The successful candidate will be employed in County Hall, Barnsley, in a modern office environment with an attractive 'flexitime' scheme.

Please write for an application form quoting the appropriate post reference to the Chief Executive (Personnel), South Yorkshire County Council, County Hall, Barnsley S70 2TN or telephone Barnsley 86141 Ext 266.

Closing date – 4th July, 1983.

South Yorkshire County Council is an equal opportunities employer.

South Yorkshire County Council
SETTING THE PACE

(4188)

LEICESTER POLYTECHNIC
SCHOOL OF ELECTRONIC AND ELECTRICAL ENGINEERING
Research in Control Engineering

INDUSTRIAL RESEARCH FELLOW

COMPUTER CONTROL OF WATER SUPPLY

A senior researcher is required to join a team working on advanced control methods. The work will be performed in collaboration with the Severn Trent Water Authority and is also supported by the Science and Engineering Research Council. The project is concerned with both the development and practical application of computer algorithms covering stimulation, optimisation, modelling and prediction techniques.

The candidate should preferably hold a post-graduate degree covering control engineering, mathematics and computing, together with relevant research experience.

The appointment is initially for a period of three years, with a starting salary in the range of £8,892 to £9,726, depending on qualifications and experience.

Application forms and further particulars available from: Personnel Officer, Leicester Polytechnic, PO Box 143, Leicester LE1 9BH. Tel: (0533) 551551, extension 2303.

(3967)

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DEVELOPMENT • DEVELOPMENT • DEVELOPMENT • DEVELOPMENT • DEVELOPMENT •

To meet the increasing demand for further developments on their extensive network, based on a dual ICL 2960 configuration our client wishes to recruit a new project team. This team, the Development and User Group, will have the objectives of outlining and planning future developments and facilitating the optimum use of available equipment and software, and will be based in Hendon on the North London/Hertfordshire border.

Team leader – to £12,500

If you have over 4 years ICL VME/B experience, a knowledge of the facilities available with both mainframe and micro-computers, and foresight and flair here is an opportunity to make your mark at the head of this new project team. You will have close users contact and be responsible for the design of large systems, hardware and software evaluation, system implementation, and supervising a development team of 4 people.

Analyst/Programmer £11,500

If you have a solid ICL Cobol background and 1 year's commercial systems experience, this is an ideal opportunity to enter a highly progressive development team at its inception. Your duties will include extensive user contact, deputising for the team leader and a small percentage of programming. A knowledge of Pascal or Fortran would be advantageous as would an interest in the interfacing of micro-computers to mainframes.

Programmer – to £9,500

If you are a programmer with a solid ICL Cobol background, preferably with exposure to Basic, Fortran or Pascal then this is an opportunity to get to grips with programming on a variety of equipment and also a superb opening into analysis. You will make use of your communicative skills with extensive user contact and learn analysis with the aid of formal training.

Operator to £8,000

If you are fed up with working a night shift, this two (day/evening) shift system could be the answer.

You must have two years experience of ICL hardware, using VME/B and (although not essential) George 111, plus a desire to use your skill to advance your career, either through technical support or programming.

Our client offers good working conditions, stability, full training in all areas and a substantial range of benefits.

For further information please telephone Ann Swain on 01-734 7394 during working hours, or on 01-785 7615 evenings and weekends or send your c.v. to the address below.

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(4166)

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(4187)

TEESSIDE POLYTECHNIC – DEPARTMENT OF COMPUTER SCIENCE

LECTURER II/SEN. LECTURER IN COMPUTER SCIENCE

There are several vacancies for permanent academic staff, plus one temporary LII for 12 months only, from September 1, 1983, to teach Computer Science at a variety of levels including HND, Degree and M.Sc. courses. In addition to substantial Polytechnic computing facilities in the Computer Centre the Department has a number of laboratories, one of which houses a VAX 11/750 and a configuration of LSI/II machines. At least one of the posts is for a member of staff who will be responsible for the oversight of this laboratory; experience of DEC equipment, UNIX, RSX/11, or VMS would be an advantage.

Other areas of special interest in the Department are computer networks, the man-machine interaction, graphics and CAD, and compiler generators.

Applicants should have good academic qualifications and be able to teach one more of the basic aspects of Computer Science, such as programming, operating systems, computer architecture, data processing, or languages and compilers.

Salary: Lecturer II £7,218 to £11,568 p.a.
Senior Lecturer £10,893 to £12,552 (work bar) – £13,442 p.a.

An appointment may be made at either Lecturer II or Senior Lecturer level but the salary on appointment will not be greater than £12,552 p.a.

Further particulars and application forms are obtainable from: The Personnel Section, Teesside Polytechnic, Borough Road, Middlesbrough, Cleveland, TS1 3BA. Telephone: (0642) 218121, Ext. 4114.

Closing date for applications: July 1, 1983.

(4117)

RPG II PROGRAMMERS

Ready for your next career step?

For the young and talented RPG II programmer with 1-2 years' experience and a sound knowledge of IBM System 34, Nielsen Clearing House is just the place to develop your computing career.

Based in Northamptonshire, we're a highly successful information technology company providing a comprehensive marketing support service (coupon clearing, market analysis and so on) to a broad spectrum of UK industry.

The programmer we're looking for will be a man or woman with the skill and initiative to become the RPG II expert of our small and highly professional DP team.

Versatility and enthusiasm are also essential qualities, as you will need to acquire systems analysis skill and become involved in the new development work currently underway.

We're a company that's growing. Fast. Our new IBM system 34 has recently been installed – just one of many exciting developments including a move in the near future to modern, specially designed offices on the outskirts of Corby.

So, as well as a competitive salary/benefits package, we can offer a particularly pleasant working environment and opportunities for acquiring expertise that only an expanding organisation can offer.

If you're a talented RPG II programmer and this sounds just the opportunity you've been waiting for, write with career details to date to: Mr. L. R. Smith, Nielsen Clearing House, 34, Queens Square, Corby, Northamptonshire.

(4095)

Nielsen Clearing House

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611

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BAHRAIN is an island glittering in the azure blue of the Arabian Gulf.

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We have been retained by a major trading group who have established a company to service the ever-increasing information processing needs of its community, in particular the banks.

Contracts are renewable two yearly. Free furnished accommodation will be provided in line with marital status. In addition to local holidays 30 days overseas leave is provided. At the end of each 12 month period a return excursion, air fare paid, is also included plus company car according to status.

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£16K basic: on target earnings £30K TAX FREE

Aged 25/35 with international banking experience, demonstrable track record in selling Burroughs products and software to banks. Familiarity with B1900/B5900 and all banking terminals and document processors.

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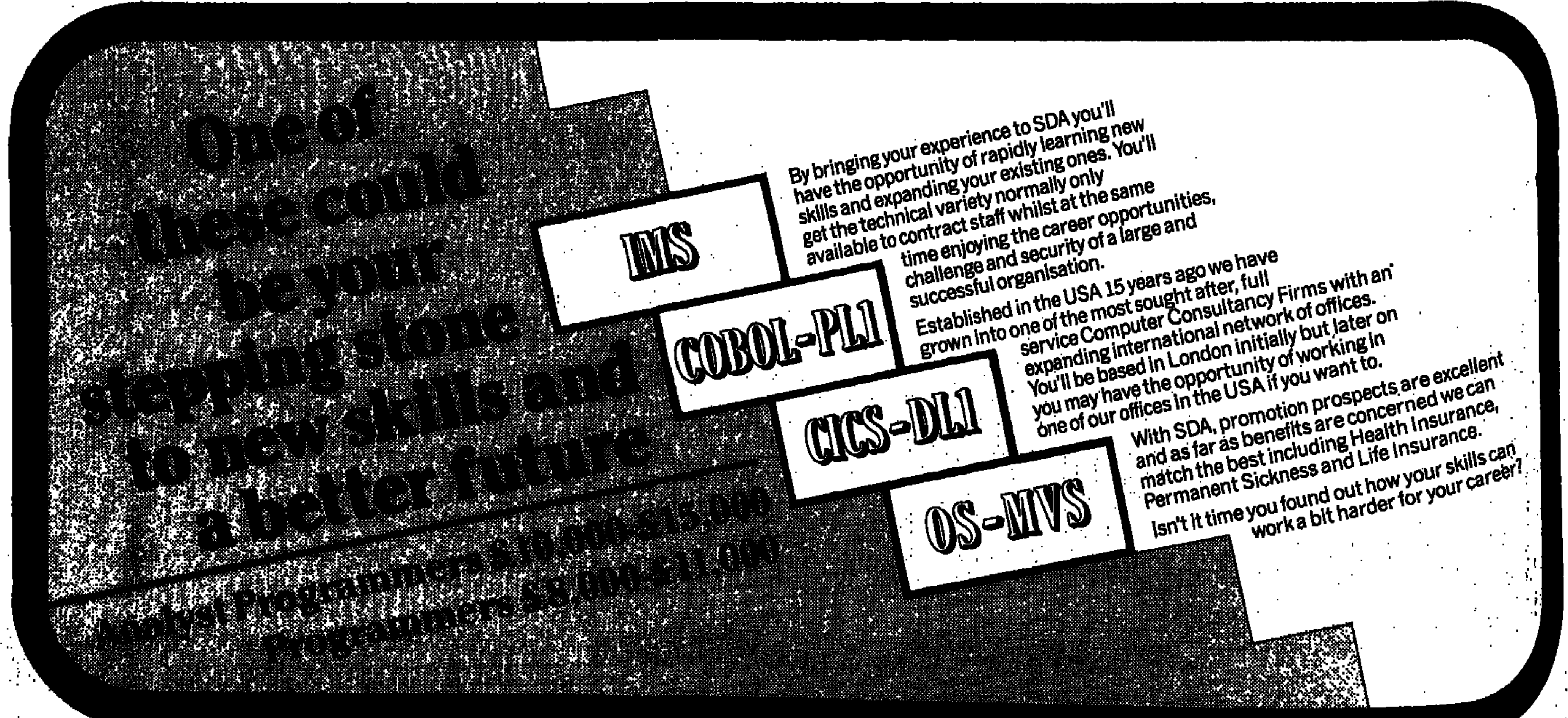
For further information please contact Kathy Sinclair on 01-637 9611.

Suite 201/6 Albany House 324 Regent Street London W1R 5AA 01-637 9611

MANAGEMENT & EXECUTIVE SELECTION

(3916)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By bringing your experience to SDA you'll have the opportunity of rapidly learning new skills and expanding your existing ones. You'll get the technical variety normally only available to contract staff whilst at the same time enjoying the career opportunities, challenge and security of a large and successful organisation.

Established in the USA 15 years ago we have grown into one of the most sought after, full service Computer Consultancy Firms with an expanding international network of offices. You'll be based in London initially but later on you may have the opportunity of working in one of our offices in the USA if you want to.

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SURREY **to £9,000**

Take this opportunity to become involved in all aspects of software development on new projects on a range of ICL and other equipment. Previous experience in an ICL environment would, therefore, be an advantage. Promotion prospects within the company are excellent.

The company is based in SURREY, with easy access from the M23. In addition to the excellent salary, the package includes free life assurance and subsidised pension and BUPA.

Interested, then contact **Computant Limited Recruitment Agency, 14 Mount Pleasant, Tunbridge Wells, Kent. Telephone: (0892) 35712/3/4. 24 hours answer phone.**

(4115)

Computant

SOFTWARE ENGINEERS

For a number of years now Interlex has been specialising in the recruitment of personnel for companies who design, develop or use computer based interactive systems in the following areas:—

- **Artificial Intelligence**
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- **Defence Systems**
- **Process Control and Automation**
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If you are looking for a new appointment within these areas, then discuss your requirements with Penni Warburg or Clare Newton, our senior consultants on 01-943 0968. Salaries range from £7K to £18K.

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We offer a rare opportunity to live in Oxford and work with a team of experienced systems designers, developing our next generation of computer and instrumentation products.

Our current very successful microcomputer family includes a state-of-the-art-network system and new developments will make use of 16 bit processors and gate array technology. Our products are designed to maintain our reputation for high standards of quality and reliability.

The successful applicants will join small teams of systems programmers responsible for all the systems software on our range of microcomputers. This covers firmware, operating systems and utilities for both stand-alone microcomputers and network stations.

Systems Programmers contribute to development projects from concept through to release. Projects are normally tackled by small teams providing maximum involvement and opportunities for responsibility at project leader level.

Previous experience should include a good degree and at least two years' experience of systems software development in industry. Experience of assembler and a high-level systems programming language is highly desirable, as is an understanding of microcomputer hardware.

We offer modern office accommodation and a salary range of £8500 to £12700 per annum depending on experience. An attractive range of benefits include: 25 days paid holiday; free BUPA; life and disability insurance; a pension scheme and generous help with your relocation to this area.

If you are interested in this vacancy please contact Polly Keane on Oxford (0865) 726136 or write for an application form, quoting ref: SP/CW6.

(4167)

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Five into one will go.

No, we're not altering the laws of mathematics. We'd simply like to point out that all the above companies — and others of similar calibre, both large and small — would like to talk to you. And the easiest way is for you to talk to us, in complete confidence.

All you have to do is complete the coupon, register your career data with us and our 10 megabyte mini helps us do the rest. We scan the register to see which of the many vacancies suit you exactly, and once the right one — or more — has been identified, providing it is not excluded by you, our clients contact you direct. The service is complete free and, as we've said, absolutely confidential. It's the fastest, most effective way to put two decision makers together and it's helped thousands of people find better jobs for over 11 years.

As an ambitious d.p. professional, you can't devote as much time to furthering your career as you'd like — so why not let someone else do it for you? Just one simple application form could put you on your way to a new, more rewarding future. To get your explanatory brochure post the coupon today.

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CW 16.6.83

Park House, 207 The Vale, London W3 7QB.
Tel: 01-743 6321 (24 hr answering service)

Enough said.

A selection of some of the current vacancies we have for qualified people are:

Systems Designers ● Systems Programmers ● Analyst Programmers ● Network Controllers ● Software Programmers ● Systems Consultants ● Programmer/Analysts ● Software Engineers ● Database Consultants ● Business Analysts ● Project Leaders ● Programmers (Commercial/Technical Applications) ● Principal Programmers (4yrs Realtime) ● CICS Consultants ● Systems Support Engineers.

To be considered for these and other important career positions all you need to do is post the coupon today to Stuart Tait, The Lansdowne Appointments Register, Park House, 207 The Vale, London W3 7QB. Tel: 01-743 6321 (24 hr answering service).

All posts are open to men and women and our service is completely confidential for companies and jobseekers.

(4127)

The Lansdowne Appointments Register

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SENIOR SUPERVISOR
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Competitive salary according to experience

Interested applicants please apply to:

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11 West Halkin Street, London SW1X 8JL
Telephone: 01-235 1466

(4094)

THE ROYAL FREE HOSPITAL
DEPARTMENT OF CLINICAL NEUROPHYSIOLOGY

RESEARCH ASSISTANT/PROGRAMMER

(Biological Signal Processing/Automated Diagnosis)

A computer system designed to perform automatic analysis of the Clinical Electroencephalogram (EEG) is under development at the Royal Free Hospital.

Applications are invited from candidates with an interest and preferably experience in Biological signal processing and/or automated diagnosis. The person appointed will be expected to assist with the routine operation of the system and also make a significant contribution to the ongoing development work.

The system is based around an HP1000 System running under RTE-IVB with programs written in both HP-Assembler and FORTRAN IV. In addition Zilog mcZ 1/20 micro processor system is being used for some development work.

Salary on scale £8,401-£10,022 per annum (including London Weighting Allowance).

Application form (to be returned by 30.6.83), available from the Personnel Department, Royal Free Hospital, Pond Street, Hampstead, London NW3. Tel: 794 0500 ext. 4288. Please quote ref. 0665.

HAMPSTEAD HEALTH AUTHORITY

(4185)

HEREFORD AND WORCESTER COUNTY COUNCIL
WORCESTER TECHNICAL COLLEGE
Department of
Science and Mathematics

Applications are invited from suitably qualified persons for the following posts:

LECTURER GRADE II — COMPUTING

The person appointed will be involved in the teaching of Data Processing, Systems and Programming in a wide variety of courses in the College. The successful candidate will also be expected to assist in the development of new courses.

An ability to programme in Cobol and/or Pascal would be an advantage.

Applicants must possess a degree or equivalent professional qualification preferably with commercial and/or teaching experience.

TEMPORARY LECTURER GRADE I — COMPUTING

This post will initially be of one year's duration from 1st September 1983.

The person appointed will be involved in the teaching of computing to a wide range of courses including GCE 'O' level, YTS and BTEC courses.

Applicants must possess a degree or equivalent professional qualification.

Salary: Lecturer Grade II £7,215-£11,568
Lecturer Grade I £5,649-£9,735
(Position on scale dependent upon qualifications and experience.)

Further details and an application form can be obtained from The Principal, Worcester Technical College, Deansway, Worcester, WR1 2JF, upon receipt of a stamped, self-addressed envelope/foolscap size. (Please quote reference SM/CW).

(4180)

SENIOR SALES EXECS

The Company: A major supplier of large software systems to financial, commercial and government sectors. The company has a proven track record within these markets.
The Requirement: A market achiever to sell into the above areas who must be able to demonstrate a track record of success.
Benefits: On target earnings of £30,000 plus 2 litre car.
Locations: London and Bristol.

For further information call Chris Morrow on 01-837 0451 (daytime) or 01-267 9409 (evenings after 7.30pm).

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WEST MIDDLESEX

c. £13,500 + PAID OVERTIME

Our client, a highly successful international company is seeking a Software Programmer with around three years' experience. Sound knowledge of MVS/JES 2 and CICS/DL1 on IBM 4341 Hardware is essential whilst familiarity with VTAM/NCP would be advantageous.

The company offers continued development work within a friendly, professional department in addition to excellent working conditions, security and good benefits. These include private Medical Scheme for self and dependants, 23 days' annual leave and subsidised restaurant.

Telephone NOW: Tom Bowles

(4208)

Hodge Recruitment
Bond House, 19-20 Woodstock St, London W1R 1HF 01-629 8863

SOFTWARE DEVELOPMENT
GATESHEAD

Joyce-Loebl, a Vickers Company, is an acknowledged World leader in the field of image analysis. We now wish to recruit innovative and technically competent software development engineers and programmers to join a development and applications team working on our advanced Image Analysis and Graphics Projects.

SYSTEM SOFTWARE ENGINEERS 9K-15K

The successful candidate will report to the Project Manager and be responsible for the design, development and maintenance of software packages. The mainstream of the work is systems development and some sales support and customer liaison is involved. A minimum of three years' programming experience in a scientific environment using a block structured language (preferably PASCAL) and a working knowledge of at least one machine assembly code is essential. A familiarity with the Intel 8085 microprocessor with either assembly language and/or PLM would be useful but not essential.

APPLICATIONS ENGINEERS 9K-15K

To develop applications of image analysis in medical diagnosis, industrial inspection and robotics. The successful candidates will have a proven record of scientific applications programming, and an original approach to solving problems.

PROGRAMMERS 6K-9K

The successful candidates will support the development engineers and should be familiar with a block structured language. This is an excellent opportunity for candidates with initiative, to gain experience in this exciting field of expanding technology. Training will be given where appropriate.

All applicants must possess a strong academic background in a computer related discipline which should include a numerate degree. The positions require a self-disciplined, professional approach and a willingness to contribute to a team effort is essential. An attractive salary will be offered depending upon qualifications and experience.

The company operates a favourable pension scheme and will assist in relocation where appropriate.

Applications should include a detailed c.v. and be sent to:
Mr A. Robinson
Technical Director
Joyce-Loebl (Vickers Ltd)
Marquisway
Team Valley Trading Estate
Gateshead
Tyne & Wear
NE11 0QW

Joyce Loebl

(4209)

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- Expected earnings are around

£24,000

The question is, do you have the appropriate qualities and experience to satisfy the needs of our client? Do you have —

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If so, we can provide you with a route to increased rewards and job satisfaction. All you have to do is contact Alasdair Scott in London or Roger Dodd in Lichfield, quoting reference WSC/053 and we will do the rest.

(4110)

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For a graduate in early twenties. The work involves micro and large computer operations using packages, BASIC programming, and statistics. Our business is varied and international. The successful applicant will be working with the Underwriting team in the Room at Lloyd's and must, therefore, not only be adaptable but prepared for a long-term commitment to the Non-Marine Insurance Market.

Apply in writing to Dai Rees, R. J. Kiln and Others, Lloyd's, Lime Street, London EC3.

(4194)

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SALARIES to £14k **LOCATION MIDDLESEX/ HOME COUNTIES**

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WD1 2JR

Telephone: John Case on Watford (0923) 25383

(4192)

STAFFORDSHIRE COUNTY COUNCIL
Highways Department

ANALYST/ PROGRAMMER

Post No. 2201179 – Computer Section
£6,873-£9,231 (pay award pending)

Commencing salary according to age, experience and qualifications

An Analyst/Programmer is required to join the Highways Department Computer Section. The Department has 13 terminals linked to the Council's IBM 4341 computer operated under VM/CMS and also uses four microcomputers. A drum plotter is available for use.

The successful applicant will join a team of four who work on development, maintenance and user support of systems for Highway and Structural Design, Transport Planning, Accounting and Management Information. About 100 active users rely on the Section as an Information Centre.

The languages used are: FORTRAN, PL/I, APL and BASIC, and increasing use is made of packages like ADRS, ADI and EASYTRIEVE.

Applicants should preferably be a graduate in a numerate discipline, and although experience in the areas indicated would be advantageous, primary consideration will be given to a candidate able to demonstrate an interest in a wide variety of applications and ability to work with minimum supervision.

Removal expenses, lodging allowances and car user allowances may be granted in approved cases.

Application forms may be obtained from the County Surveyor, Tipping Street, Stafford ST16 2LP.
Closing date: 11th July 1983. This post is open to men and women.

All applicants are asked to note that it is the County Council's view that it is desirable for their employees to be members of an appropriate trade union.

(4187)

SALES BIT

Quality of Management – 56

Incentives can reduce achievement

INCENTIVE schemes cannot be considered lightly, for if they are ill-conceived they can become a negative force that actually reduces sales achievement.

Offer an incentive that is out of reach and all you will get in return is demotivation. Create an incentive with the wrong emphasis and it may have little effect on real performance and may even leave you exposed to connivance.

I am told (but I cannot vouch for the truth of it!) that a major car manufacturer recently offered its dealers a £500 bonus for every car of a particular model registered within a selected period. As a result they topped the market for sales for a brief period.

Apparently the very expensive exercise had achieved their two main objectives: First, they obtained the publicity and thus the credibility for topping the sales league table. Second, and more important, they had increased the volume of car sales.

However, the word soon got about that due to the scheme being based on registrations rather than new sales to end users, most distributors had been including the registration of their own demonstrator cars in order to pick up the £500 bonus. These were not actually end user sales but rather increases of stockholding. So the resultant figures were artificially inflated, which did nothing for the credibility of the manufacturer and not as much as was thought for actual sales.

This happened simply because nobody actually thought through all the ramifications of the scheme.

What are incentives? They are variable short-term devices for increasing sales within a selected area of sales activity for a discrete period. They are not commitments within the salesman's terms of employment like salary, commission, health insurance, pension fund and share options.

They can take a variety of forms, both financial and material, and can be put into effect at any time for any period according to the judgment of the sales manager.

Incentives can serve a variety of purposes. Sometimes they can be used to improve flagging performance. However, some sales managers will not acknowledge such a necessity for they view it as a compensation for failure on their part to motivate adequately their subordinates.

Maybe they are right, but usually it is an unnecessary paranoia, and what does it matter anyway if the short-term incentive does the trick? After all, he is actually utilising a different facet of his management skill.

Incentives are usually more effective if they are used to make a well motivated, successful salesforce even more motivated and successful: "Look you guys, you are all doing a good job and the company is pleased with your performance. Right now we need to increase the sales of this particular product in order to exploit a short-term market opportunity. This will of course involve extra work on your part, but only if you are able to cope with it, there is no compulsion. Of course, these extra demands upon you and your time must entitle you to special rewards in return. Consequently, we are introducing the following incentive scheme."

Whatever the current level of sales success it can usually be improved by the introduction of a well conceived incentive scheme, though there's not a lot of point if you already have an order backlog or a technical problem with the product. The important thing is to have a clear understanding of the ultimate objective of the exercise before even contemplating the nature of the incentive scheme.

The possibilities are endless: Launching a new product, offsetting the effect of a new product launch by your competition; increasing the number of new accounts, perhaps of a particular type; collecting overdue accounts; offsetting seasonal revenue "troughs"; reviving a flagging product.

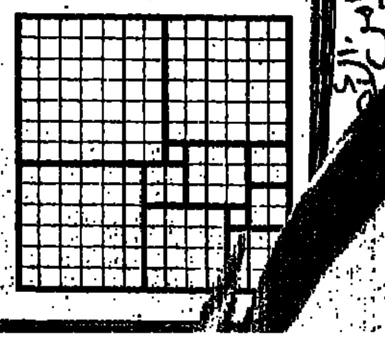
A powerful device for increasing the impact of an incentive scheme is to incorporate it with a selected incentive for clients. If you can give your salesman the lift of a special incentive, then augment it with a competitive edge, you are likely to enjoy a considerable uplift in sales. If you don't, maybe you should consider abandoning the product!

One classic problem with apparently successful sales incentive schemes is that, despite an identifiable uplift in sales during the period concerned, the total volume of sales for the year is much the same as if no incentive scheme had ever been put into effect. Closer examination reveals that sales immediately before the introduction of the scheme and immediately after it have dropped significantly. It doesn't take a lot of imagination to discover the reason why.

"Thanks for the order Mr Customer. I hope you won't mind if I date it for a few days ahead because I'm trying to win a sales competition" or "I've dated it from the first of next month in order to give you an extra 30 days credit."

Conversely, it is not beyond the wit of the typical salesman to present equally plausible reasons for backdating an order.

Alan Williams

PUZZLE ANSWER